

FIG. 1

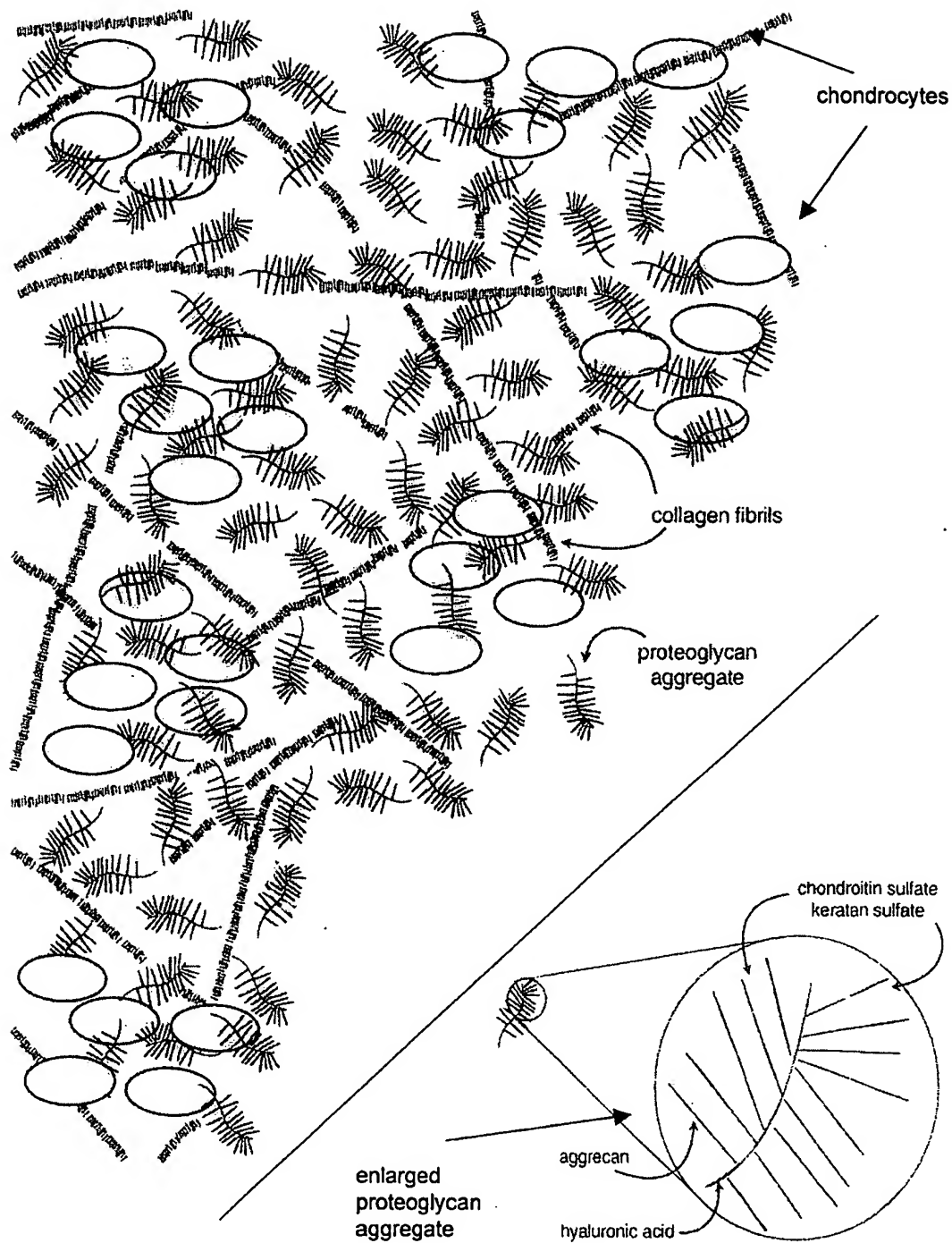


FIG. 1A

FIG. 2

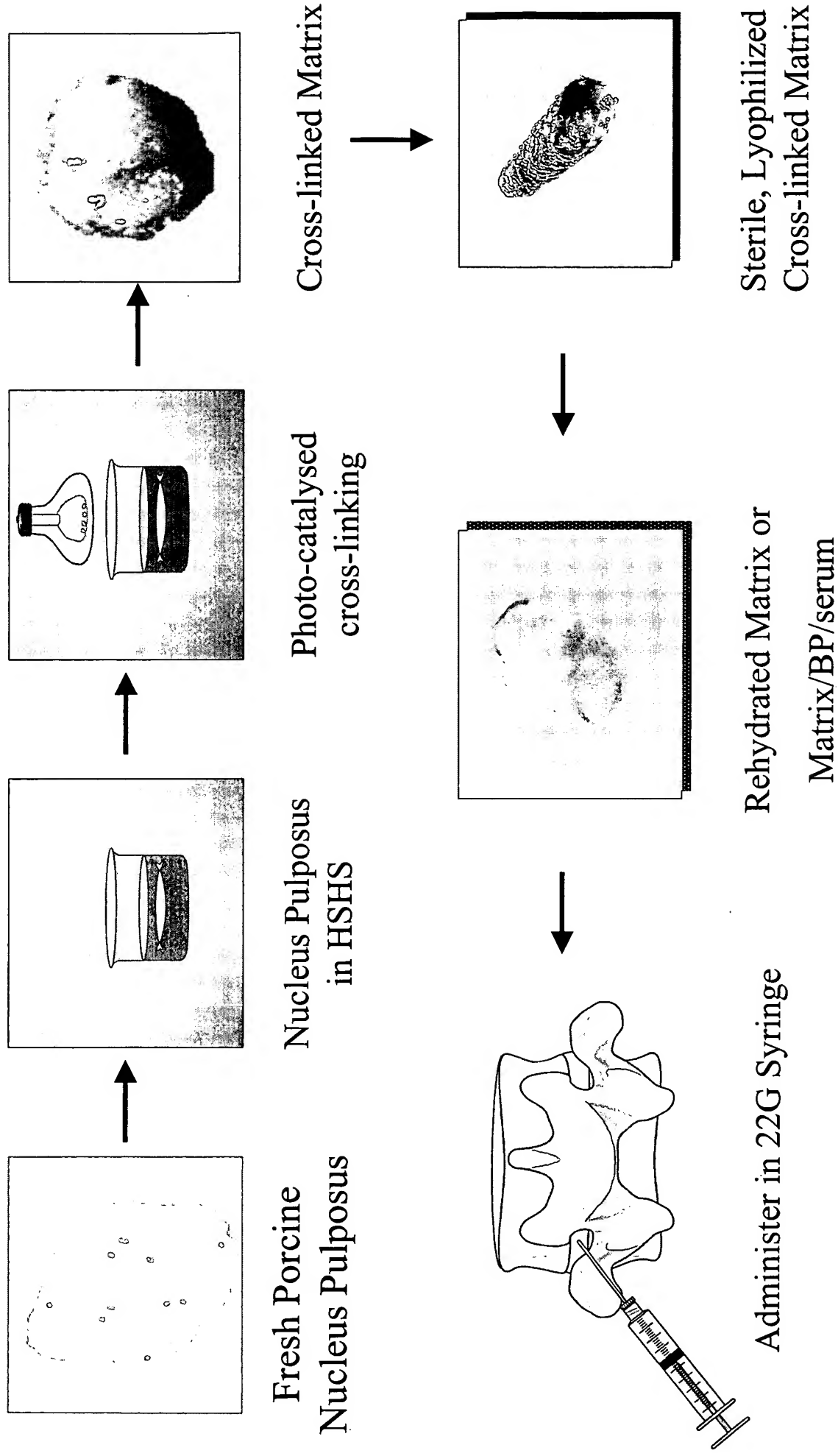
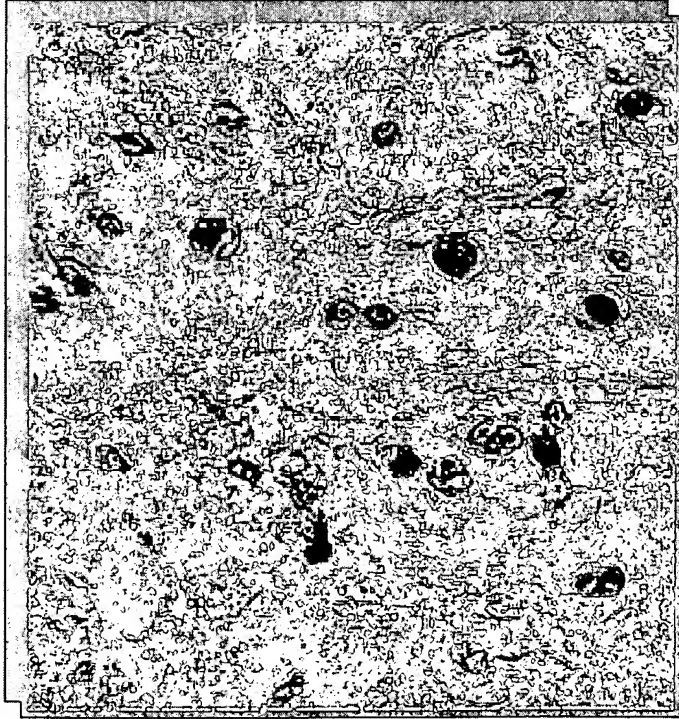


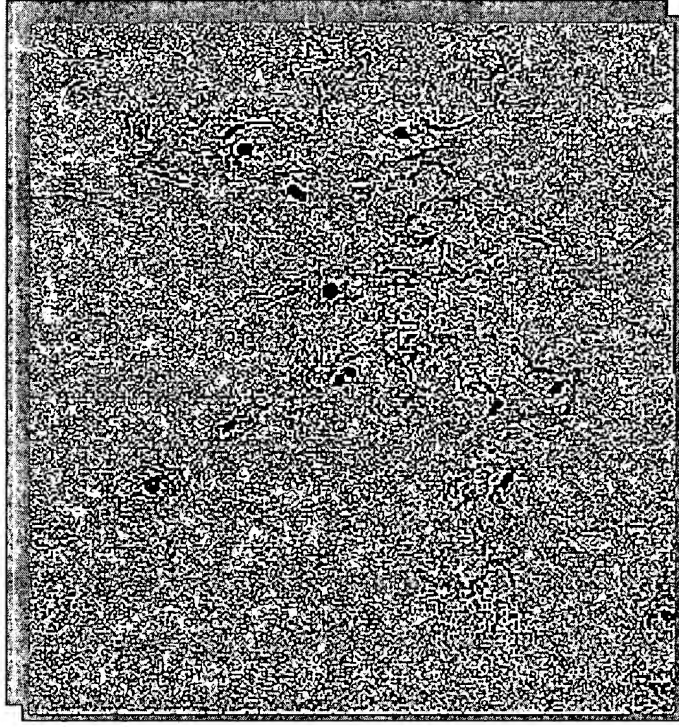
FIG. 3



**FIG. 4**

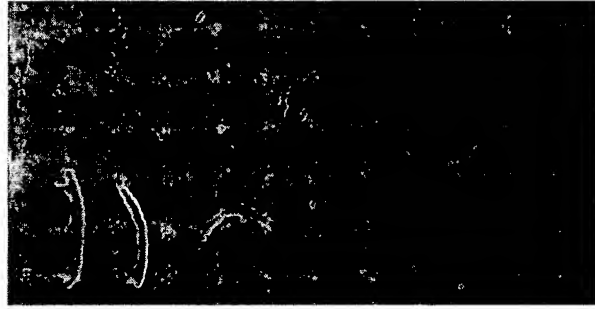


**Fresh Nucleus Pulposus**



**Cross-linked Matrix**

**FIG. 5**



A B

FIG. 6

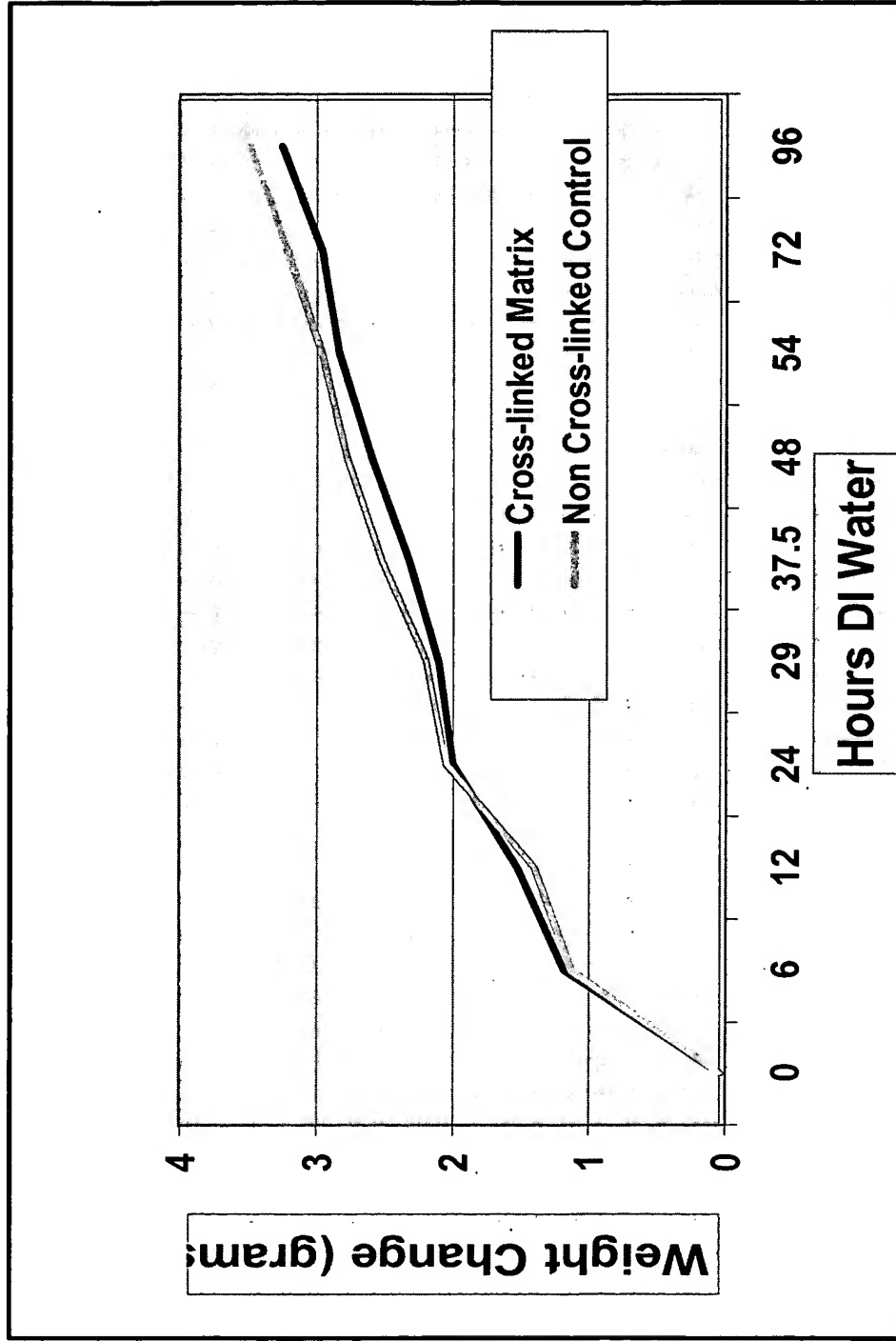


FIG. 7

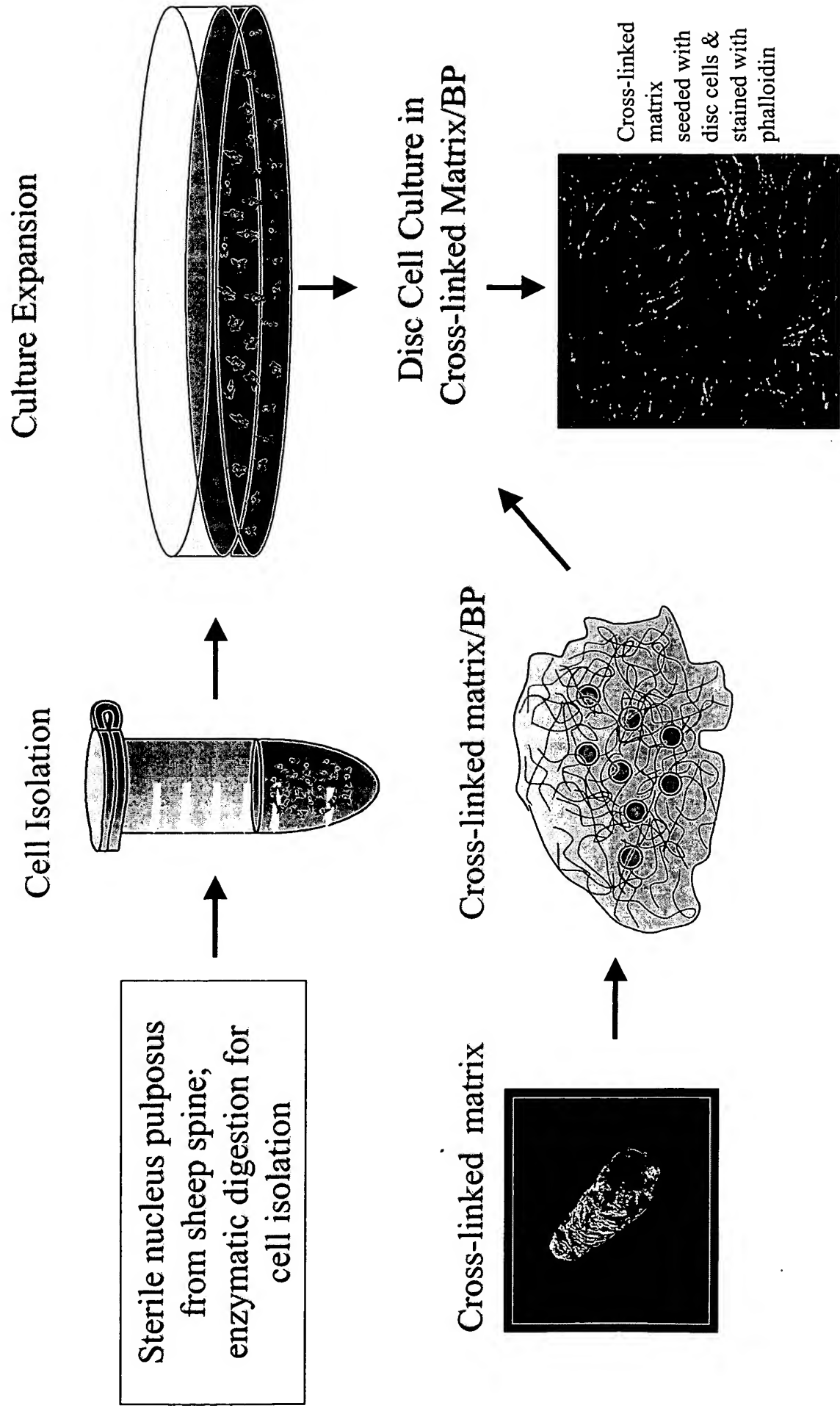


FIG. 8

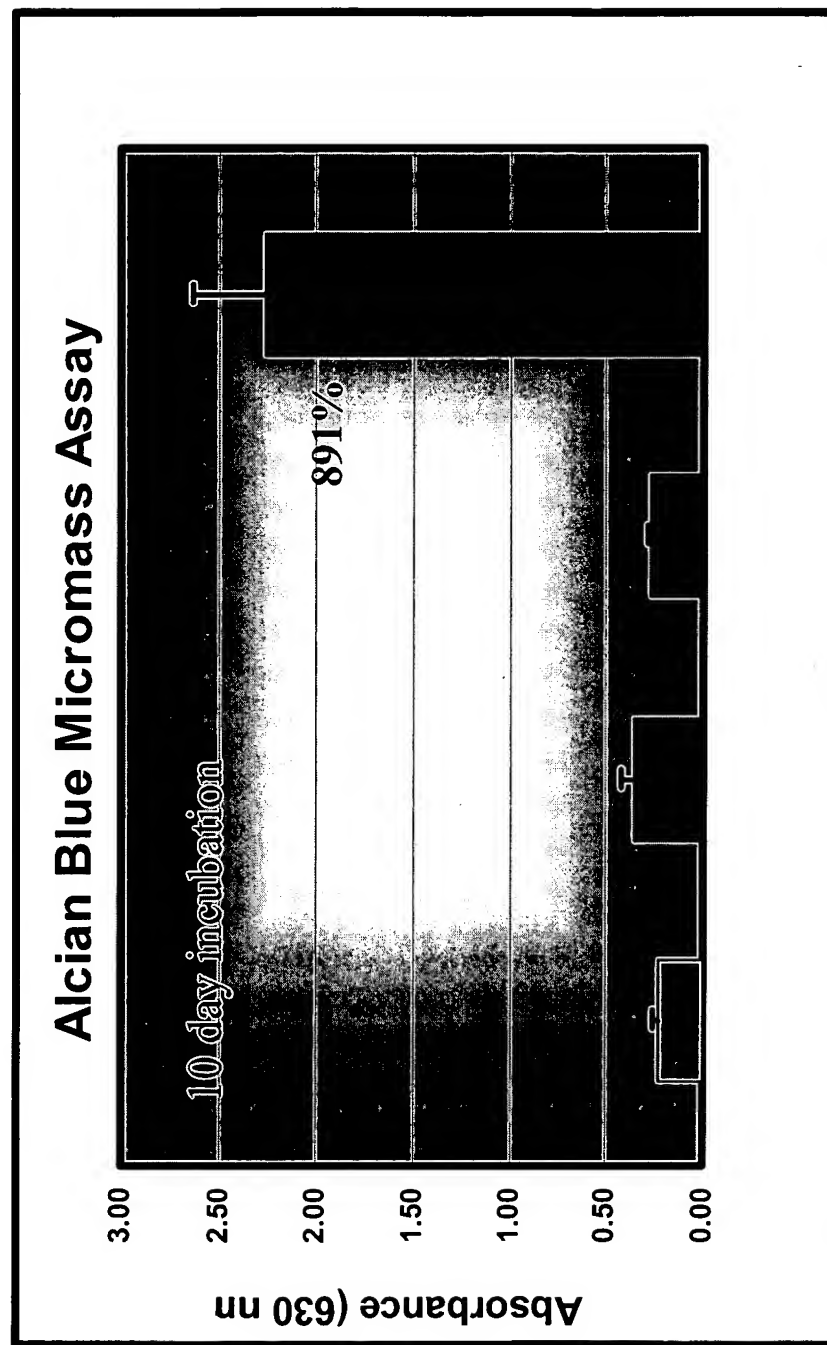
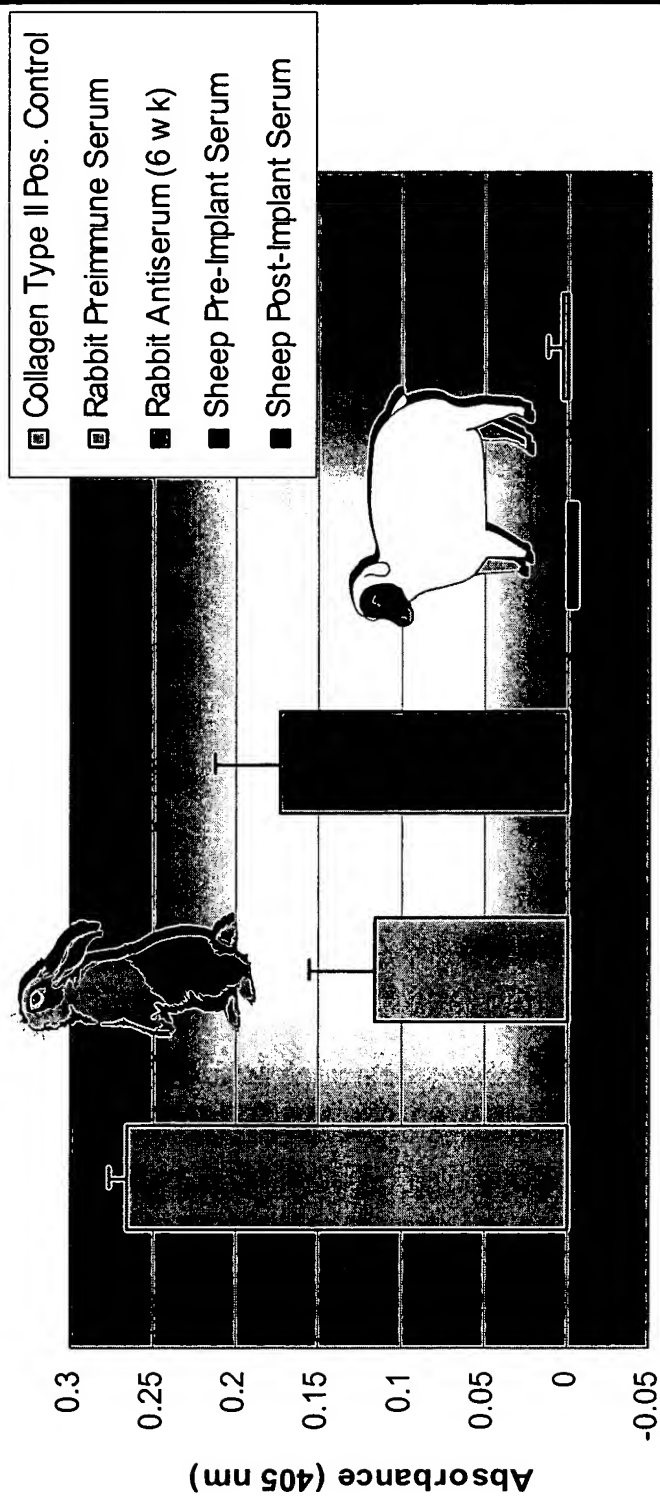




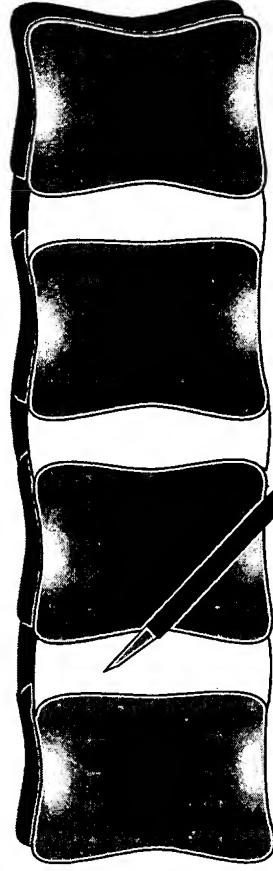
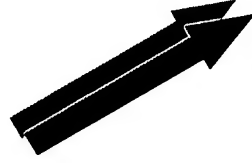
FIG. 9

## ELISA Analysis of Cross-linked Matrix



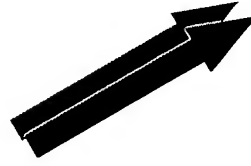
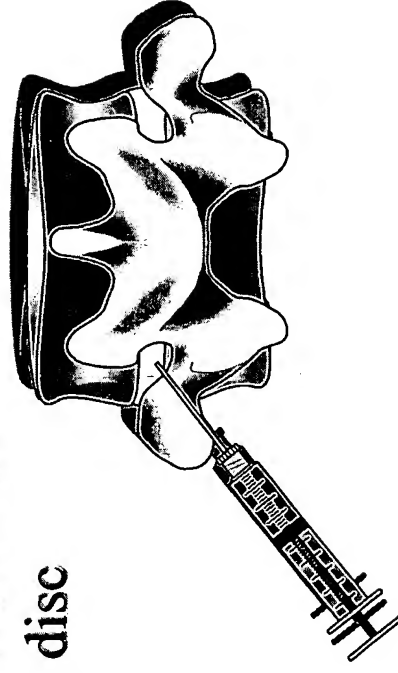
**FIG. 10**

**1st operation: annulus stabs to create two degenerative discs**



**Wait 2 months**

**2nd operation: Cross-linked matrix/BP gel treatment injection to one disc**



- Histomorphometry
- MRI/radiographs
- Immune response

**Sacrifice: 2, 4, and 6 months**

FIG. 11

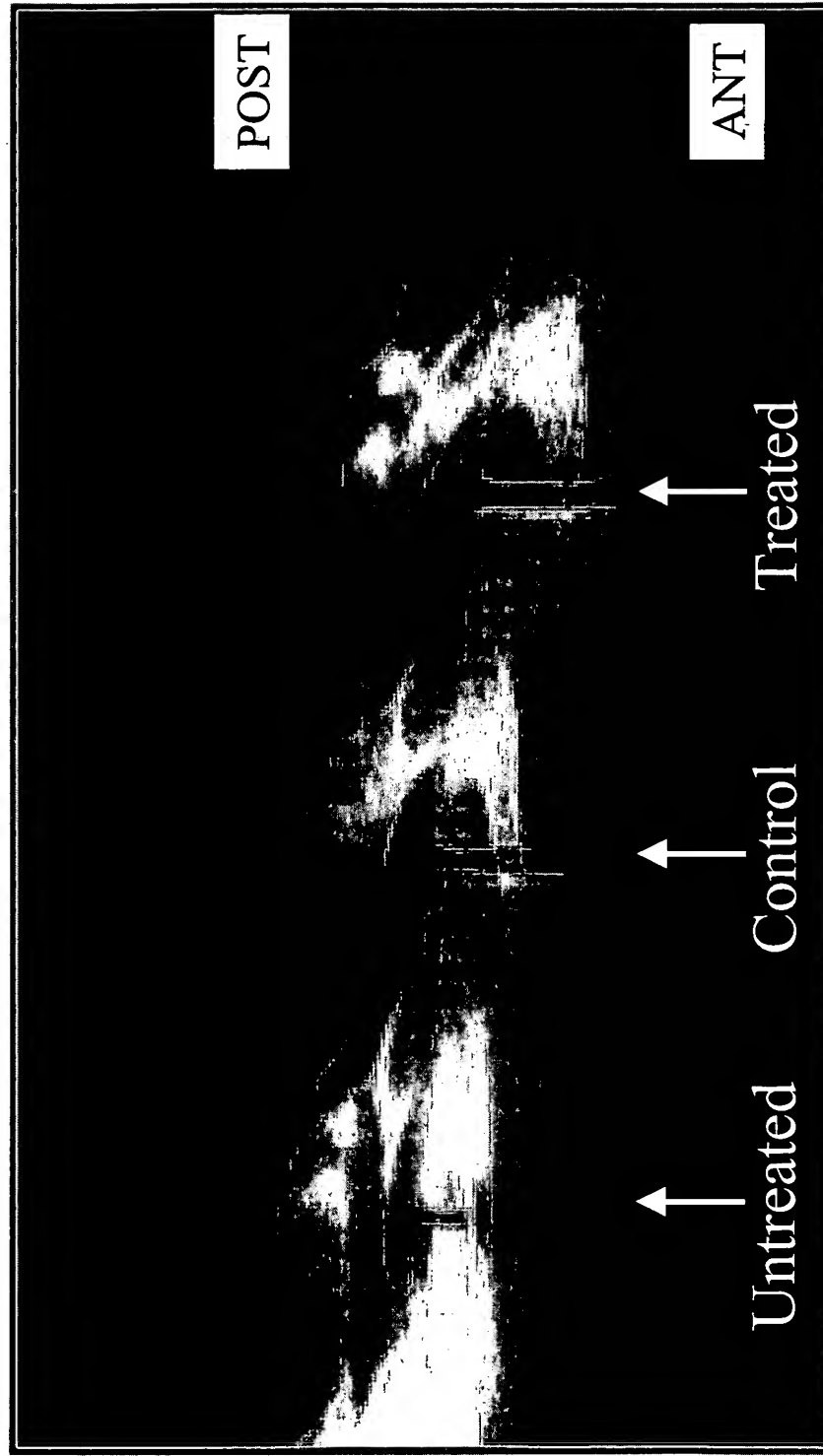
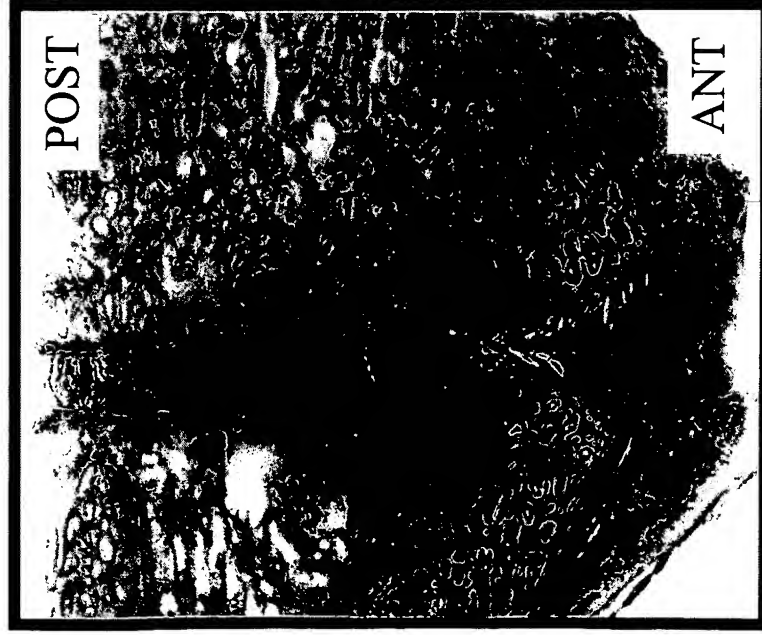
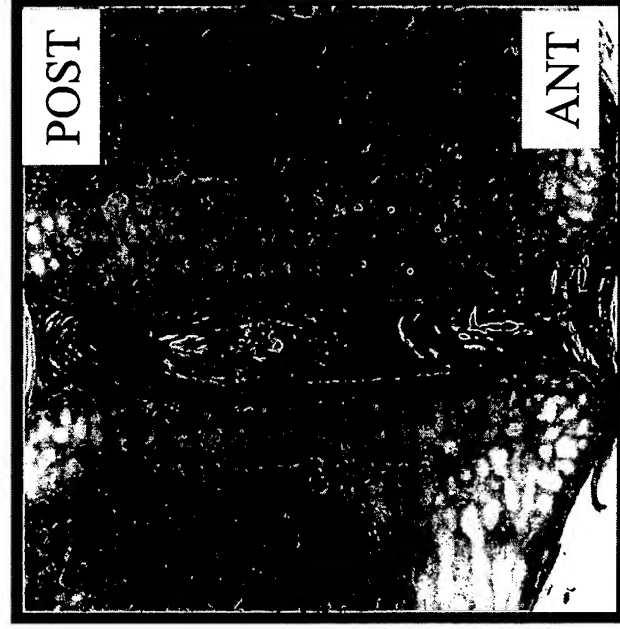


FIG. 12A



Untreated disc

FIG. 12B



Control

FIG. 12C



Treated disc

FIG. 13

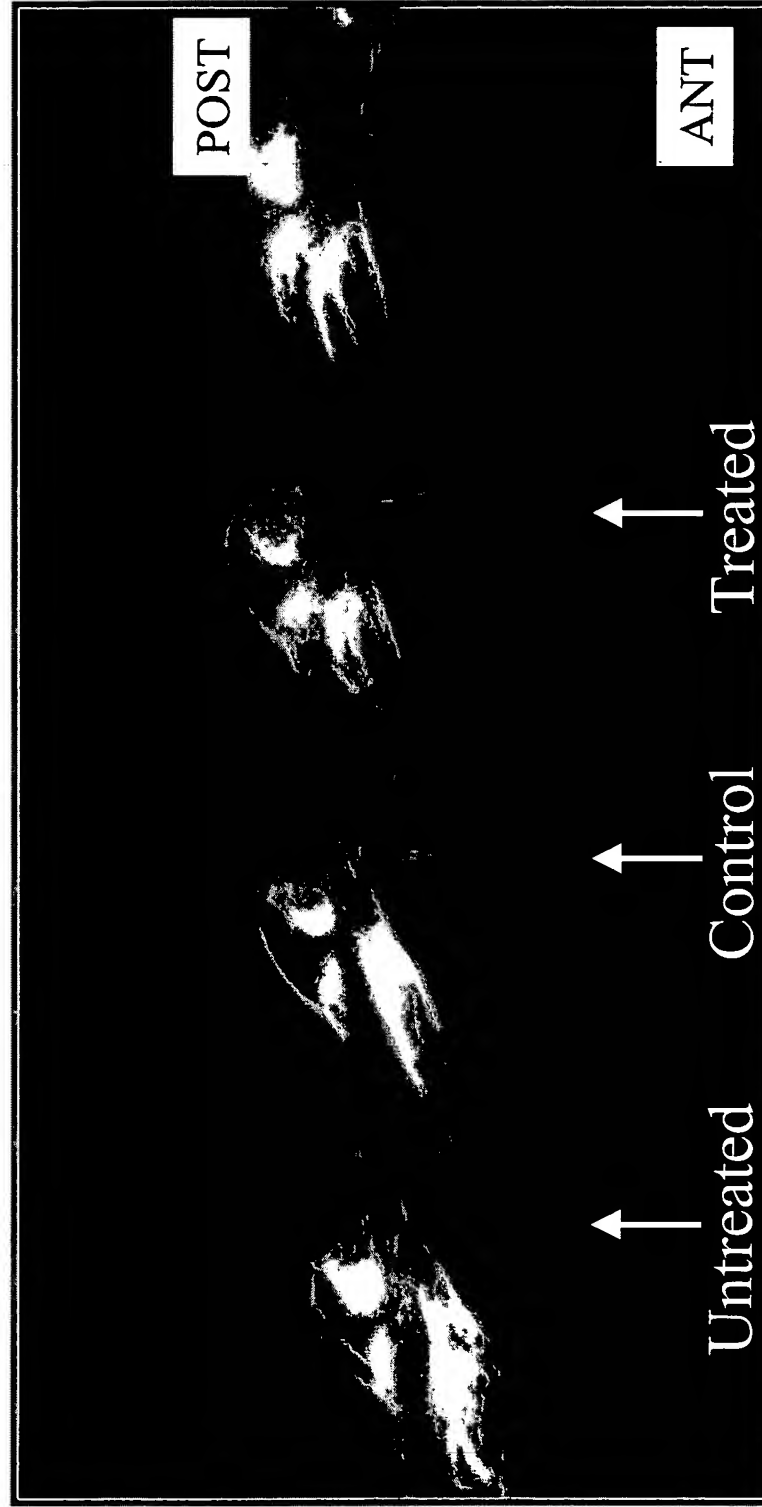


FIG. 14

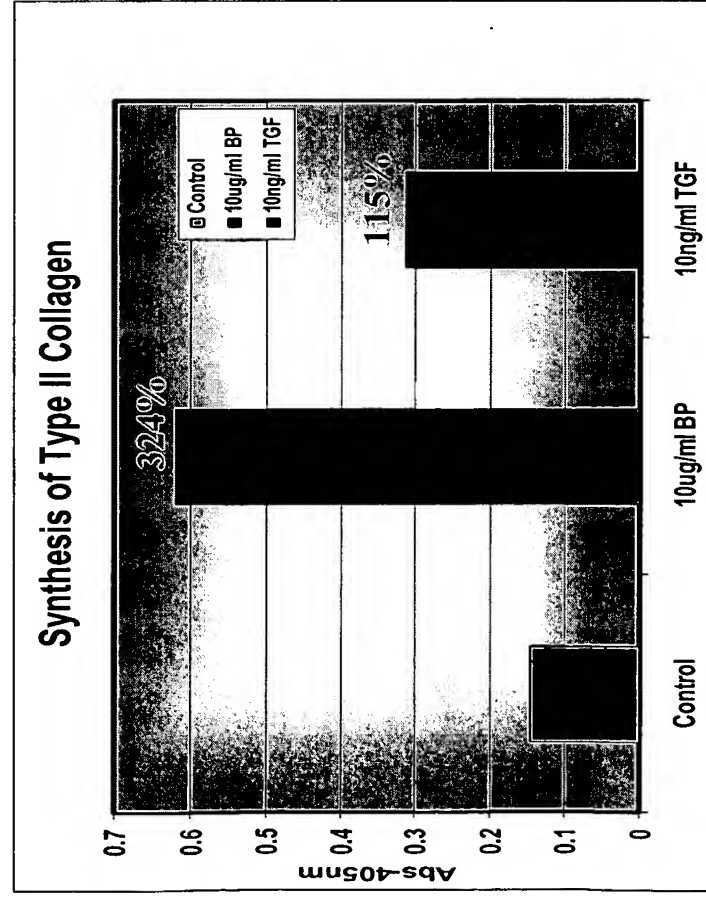


Treated

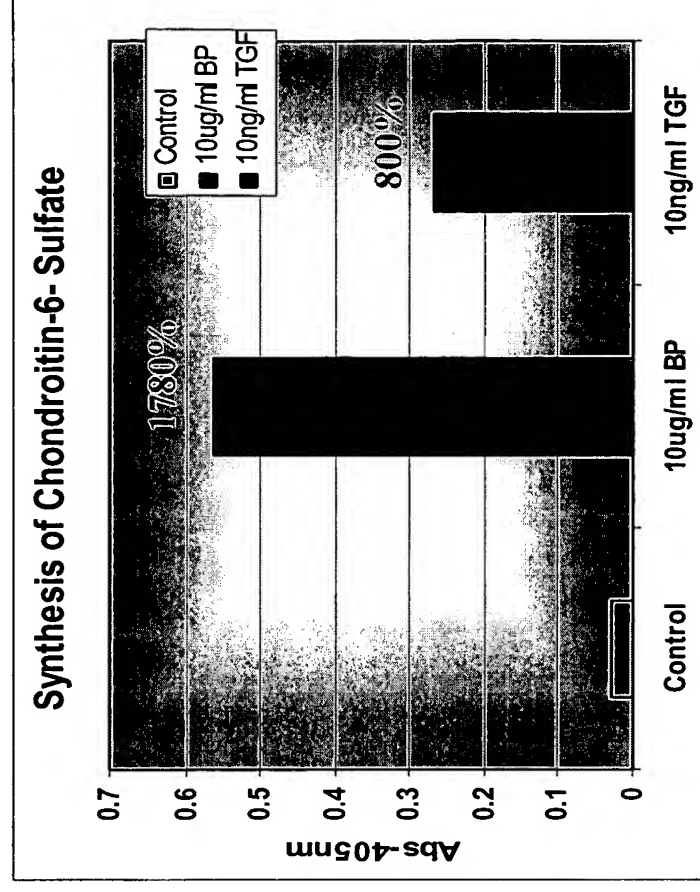
Control

Untreated

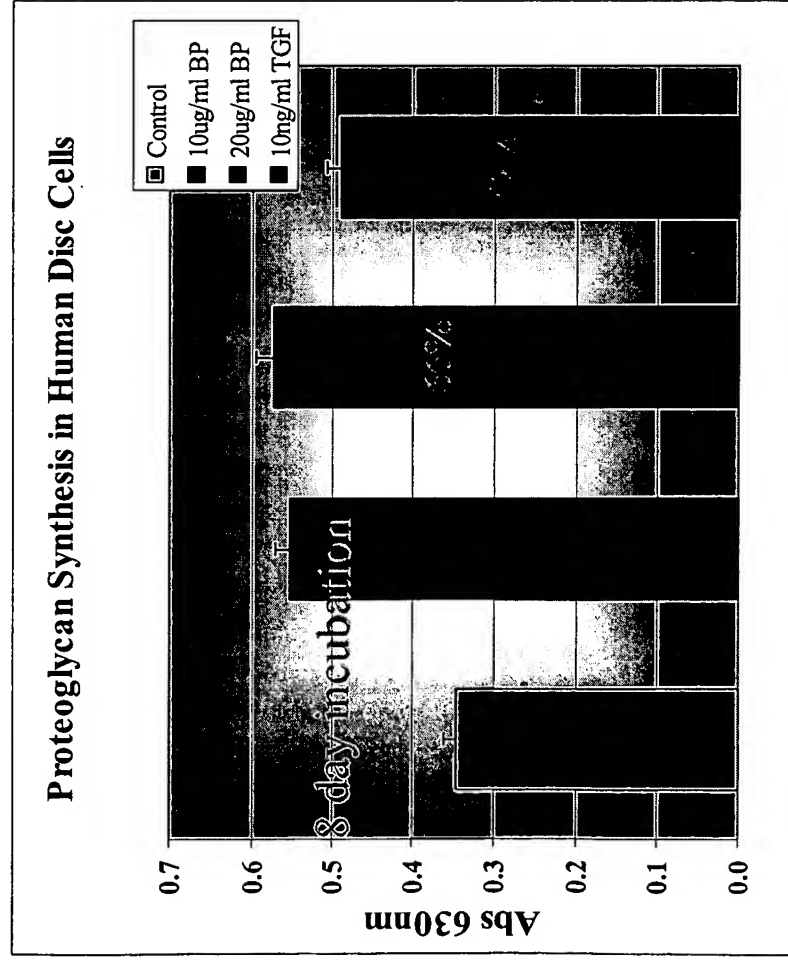
**FIG. 15A**



**FIG. 15B**



**FIG. 16A**



**FIG. 16B**

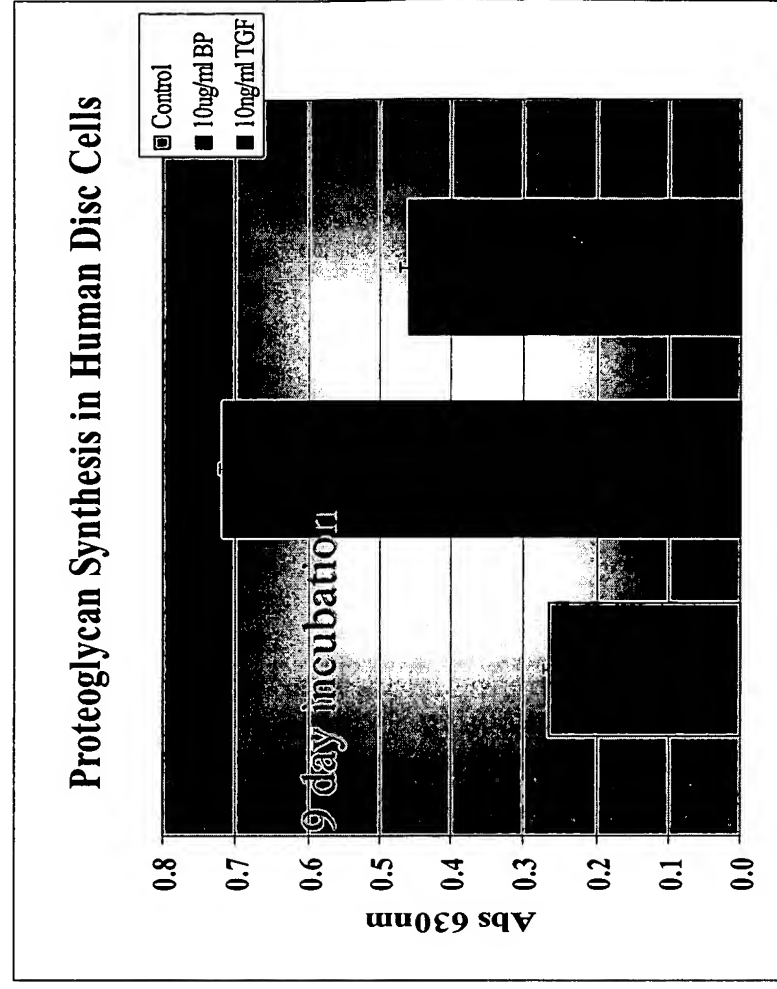




FIG. 17

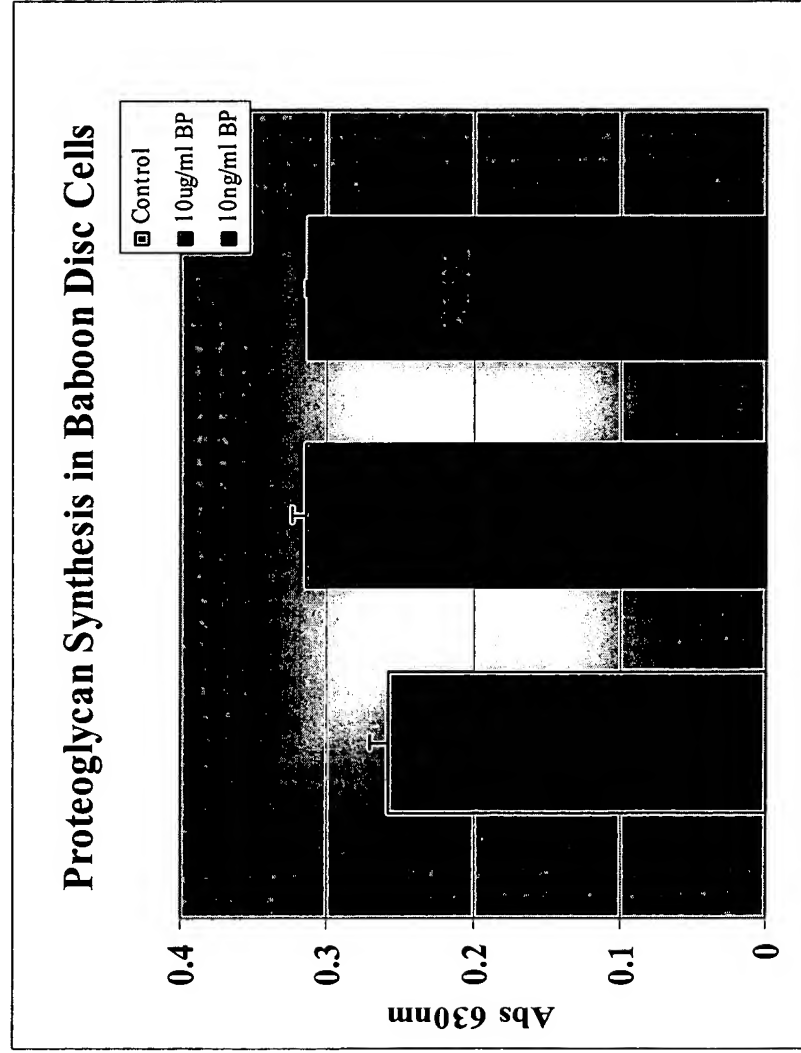


FIG. 18

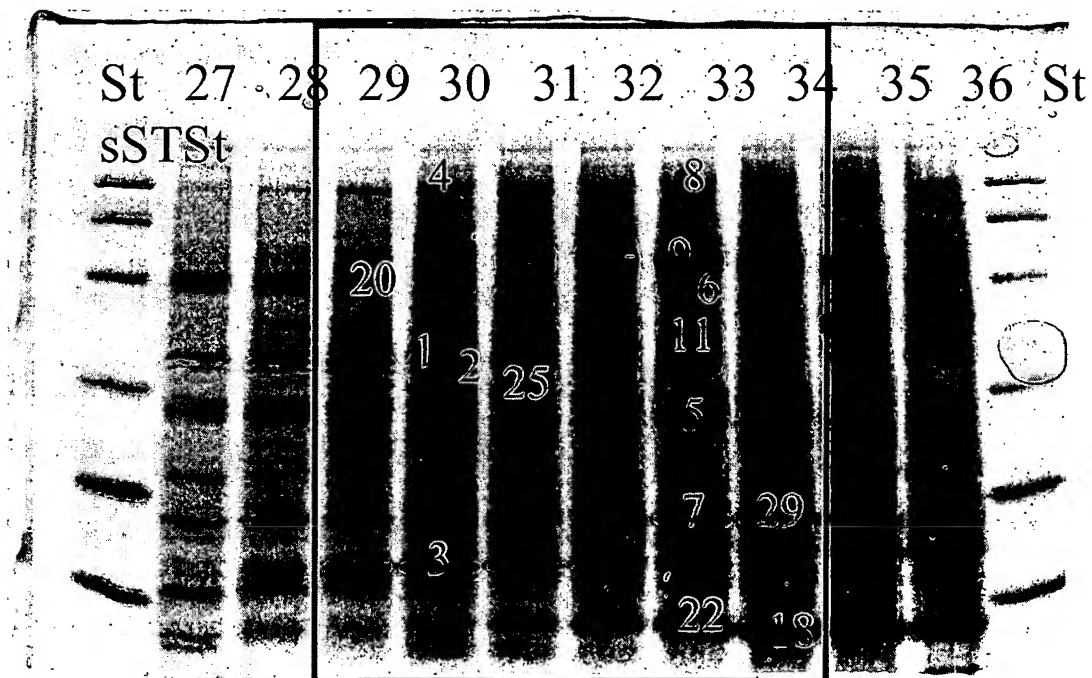
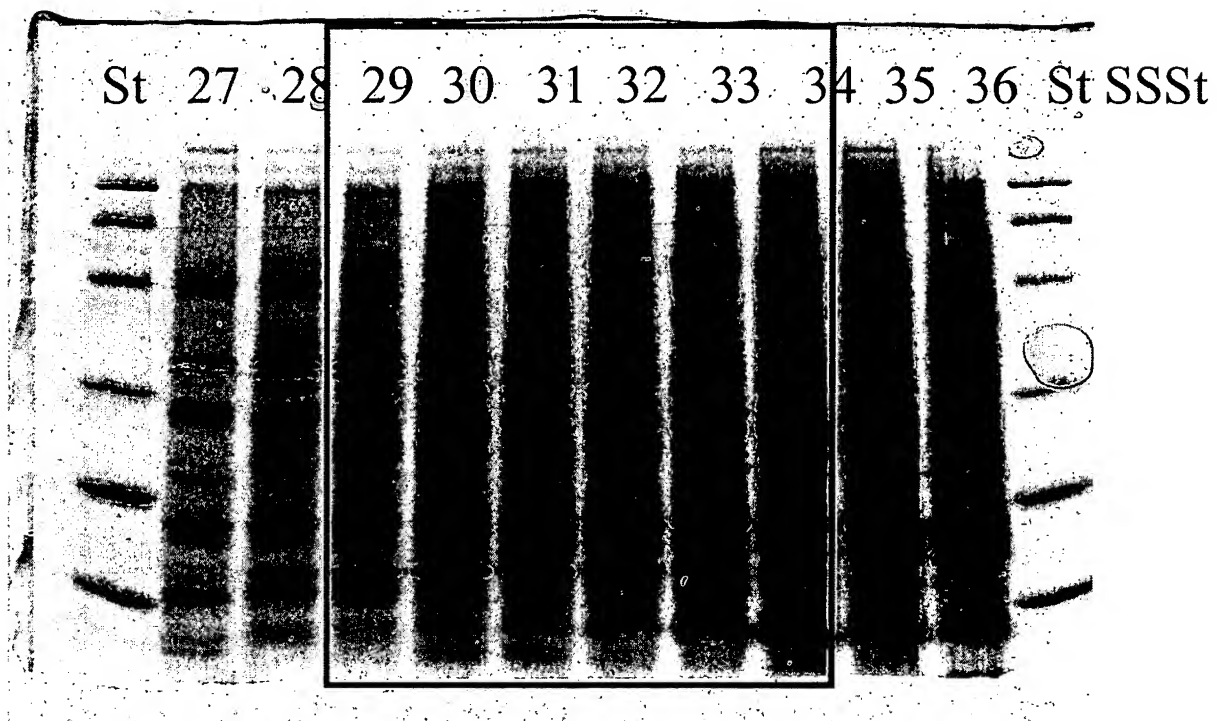
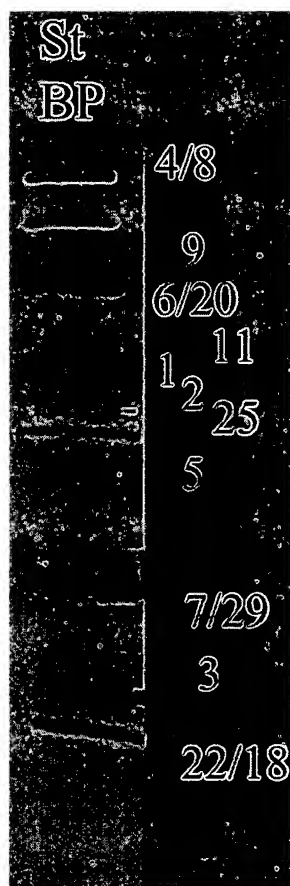
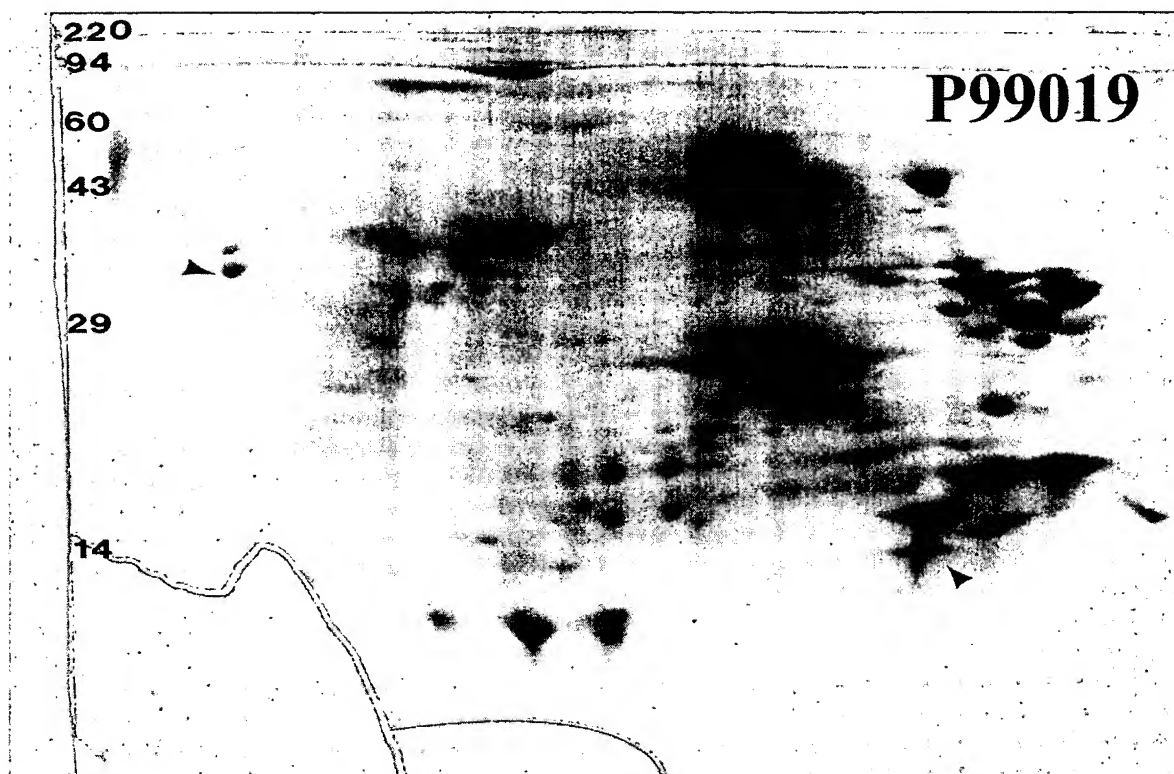


FIG. 19

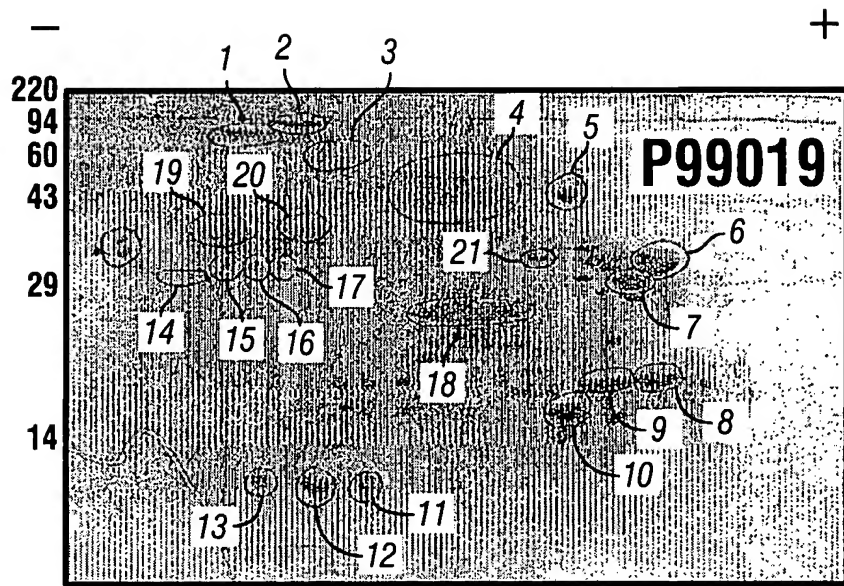


Band No.	Identity
1	Histone H1.c
2	Histone H1.c
3	Ribosomal protein RS20
4	Similar to ribosomal protein LORP
5	BMP-3
6	$\alpha$ 2 macroglobulin RAP and BMP-3
7	Similar to ribosomal protein LORP
8	BMP-3
9	BMP-3
11	Ribosomal protein RL6 and BMP-3
18	TGF- $\beta$ 2 / SPP 24
20	Factor H
22	TGF- $\beta$ 2
25	BMP-3 and H1.x
29	BMP-3 and ribosomal protein RL32

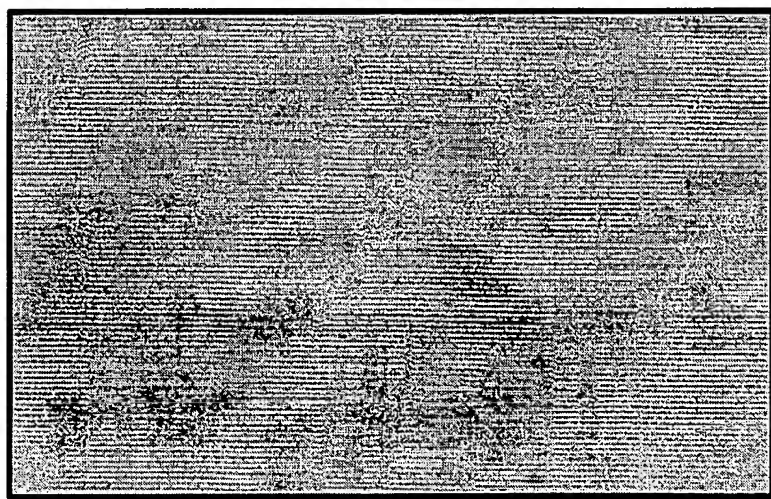
**FIG. 20**



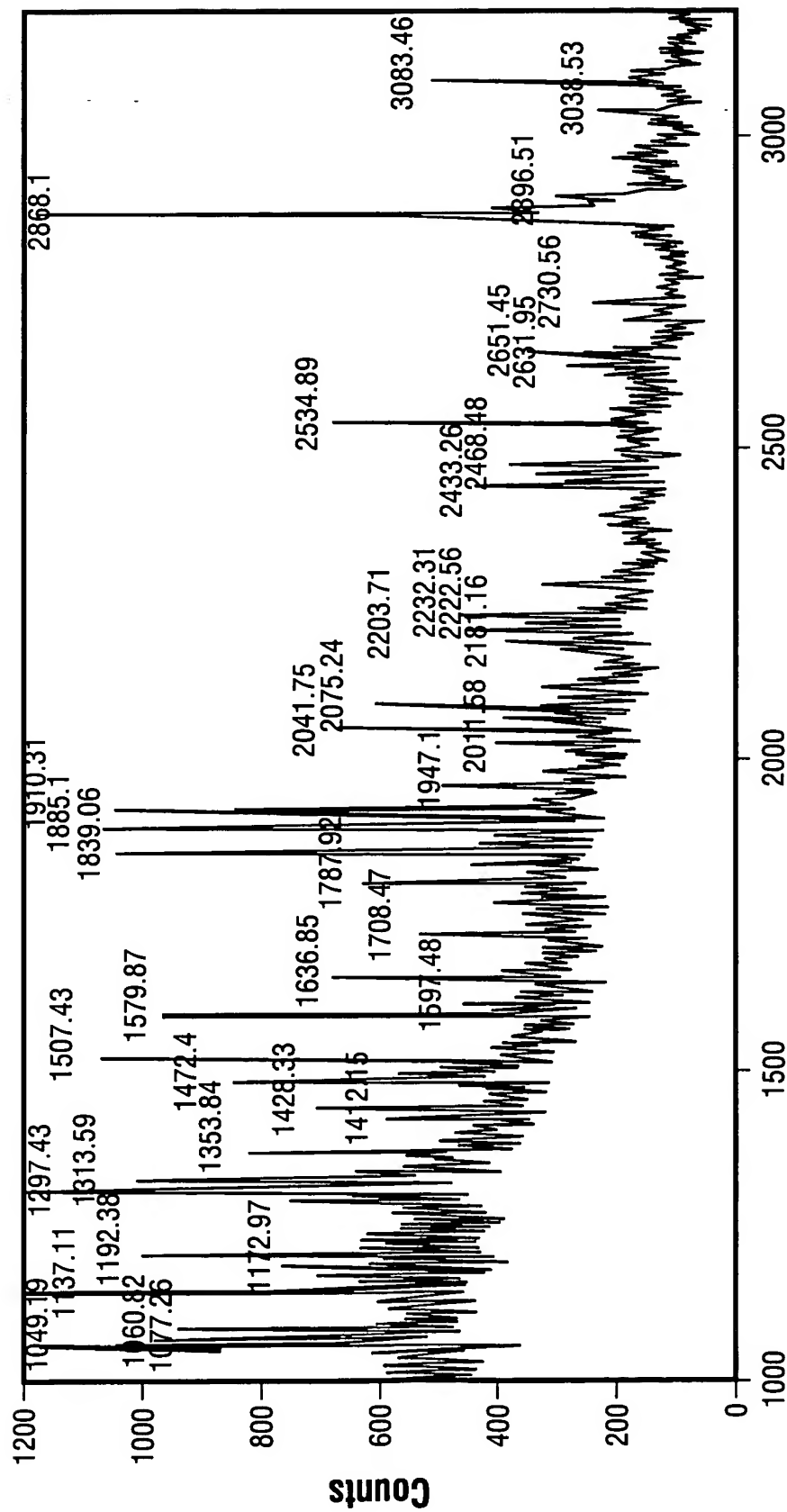
**FIG. 21**



**FIG. 22**



**FIG. 24**



### Mass (m/z)

COMMENT: BARNES-1, TRYPSIN, 7.5%

METHOD: LDE1000A

ACCELERATING VOLTAGE: 20000

GRID VOLTAGE: 94.000 %

GUIDE WIRE VOLTAGE: 0.075 %

DELAY: 50 ON

LASER: 1965

SCANS AVERAGED: 256

PRESSURE: 1.70E-06

LOW MASS GATE: 500.0

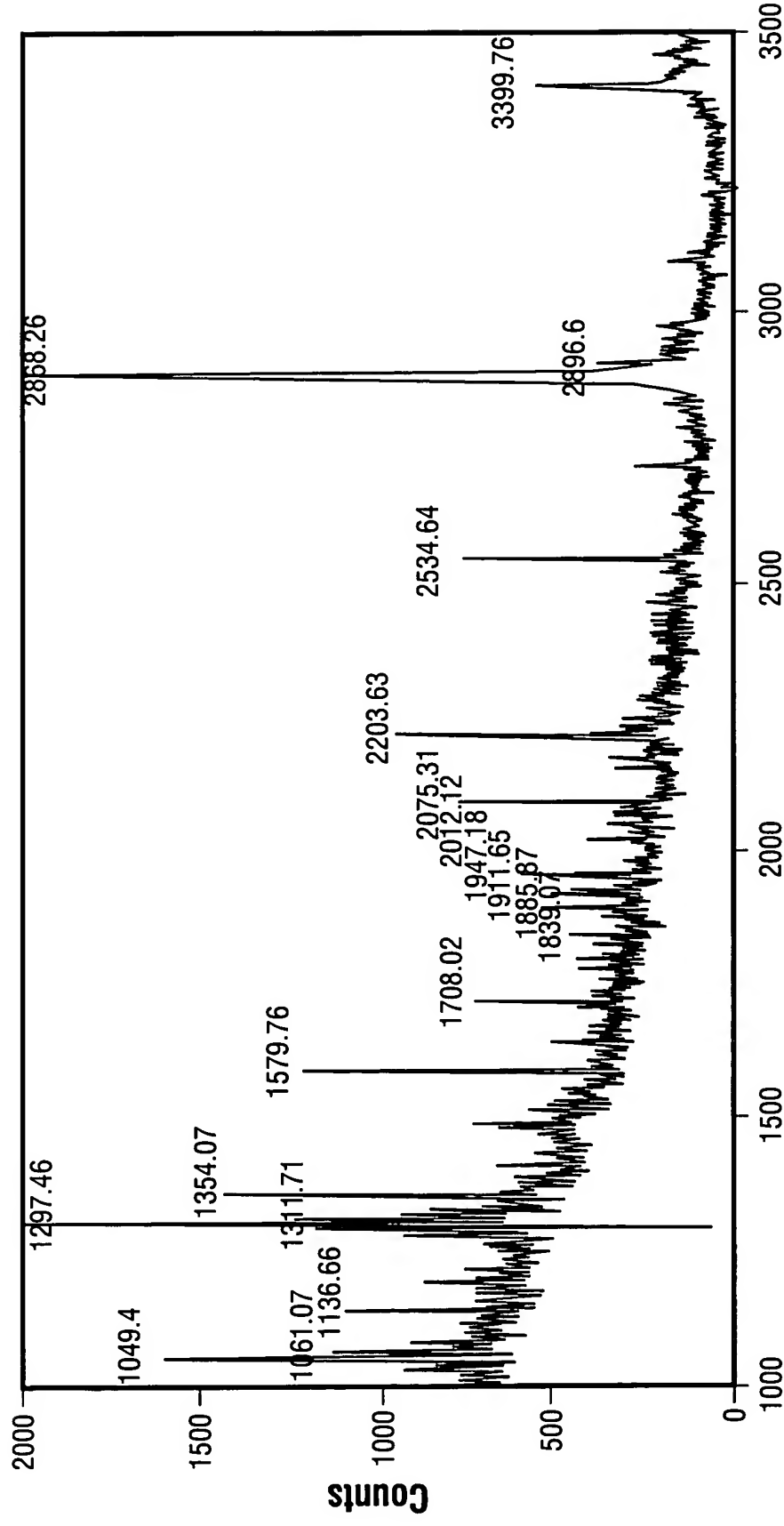
MIRROR RATIO: 1.060

PSD MIRROR RATIO:

TIMED ION SELECTOR: 16.1 OFF

NEGATIVE IONS: OFF

FIG. 23A (Band 1)



### Mass (m/z)

COMMENT: BARNES-2, TRYPSIN, 7.5%

METHOD: LDE1000A

ACCELERATING VOLTAGE: 20000

LASER: 1965

MIRROR RATIO: 1.060

MODE: LINEAR

GRID VOLTAGE: 94.000 %

SCANS AVERAGED: 256

PSD MIRROR RATIO:

GUIDE WIRE VOLTAGE: 0.075 %

PRESSURE: 1.58E-06

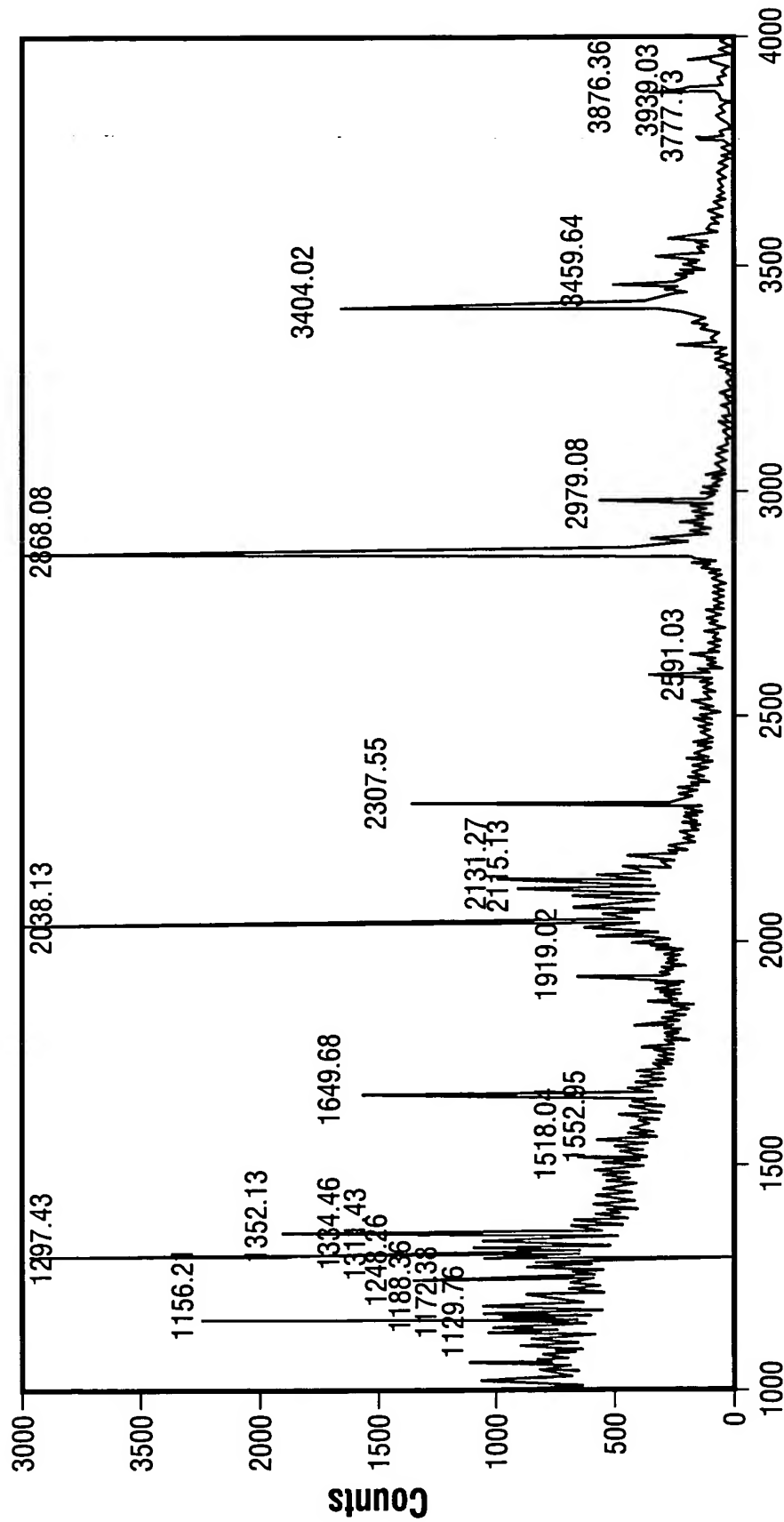
TIMED ION SELECTOR: 16.1 OFF

DELAY: 50 ON

LOW MASS GATE: 500.0

NEGATIVE IONS: OFF

**FIG. 23B (Band 2)**



### Mass (m/z)

COMMENT: BARNES-3, TRYPSIN, 7.5%

METHOD: LDE1000A

MODE: LINEAR

ACCELERATING VOLTAGE: 20000

GRID VOLTAGE: 94.000 %

GUIDE WIRE VOLTAGE: 0.075 %

DELAY: 50 ON

LASER: 1965

SCANS AVERAGED: 256

PRESSURE: 1.5 E-06

LOW MASS GATE: 500.0

MIRROR RATIO: 1.060

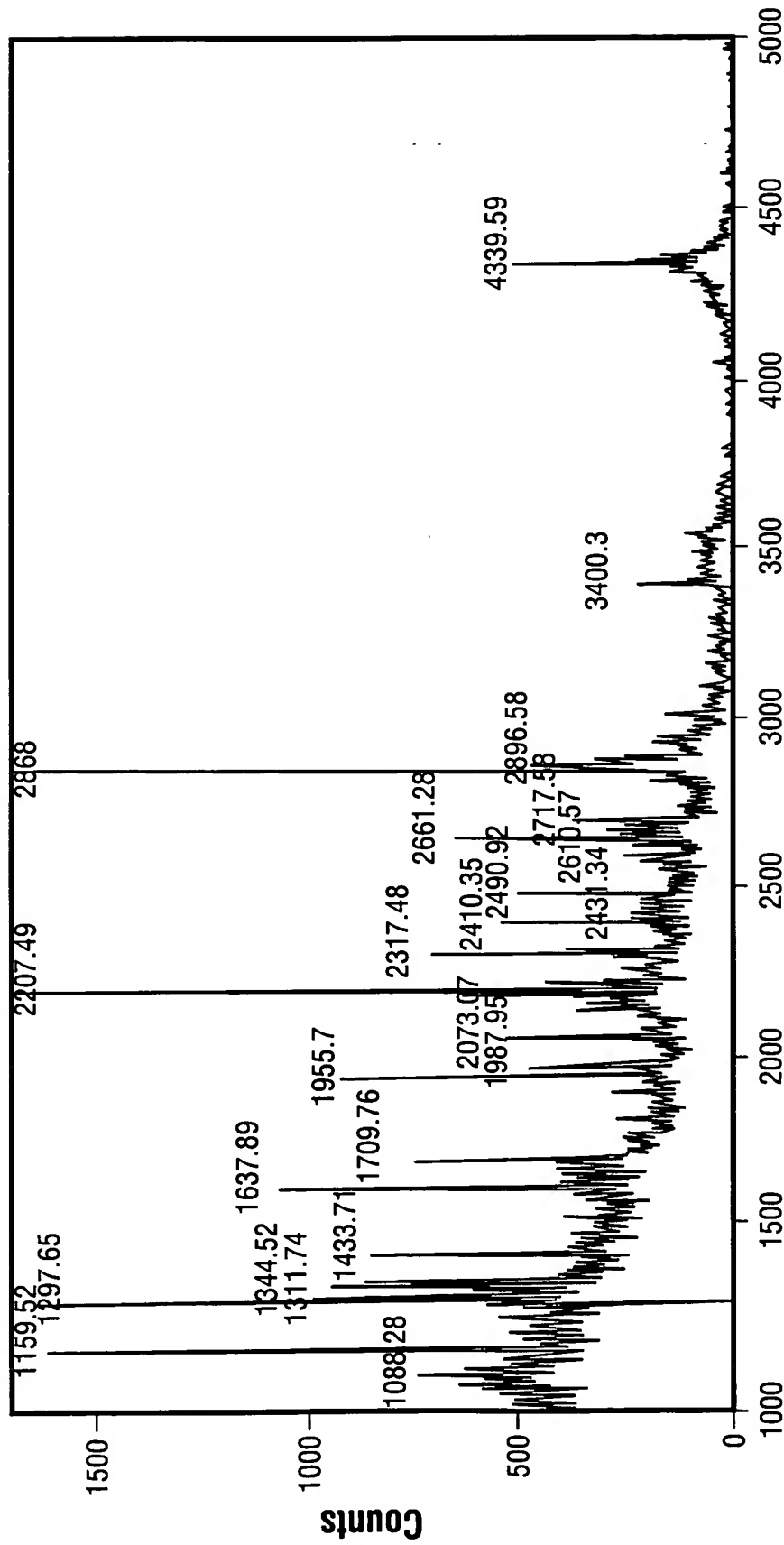
PSD MIRROR RATIO:

TIMED ION SELECTOR: 16.1 OFF

NEGATIVE IONS: OFF

FIG. 23C (Band 3)





**Mass (m/z)**

**COMMENT: BARNES-4, TRYs, 5%**

METHOD: LDE1000A

ACCELERATING VOLTAGE: 20000

LASER: 1965

MIRROR RATIO: 1.060

MODE: LINEAR

GRID VOLTAGE: 94.000 %

SCANS AVERAGED: 256

PSD MIRROR RATIO:

GUIDE WIRE VOLTAGE: 0.075 %

PRESSURE: 9.04E-07

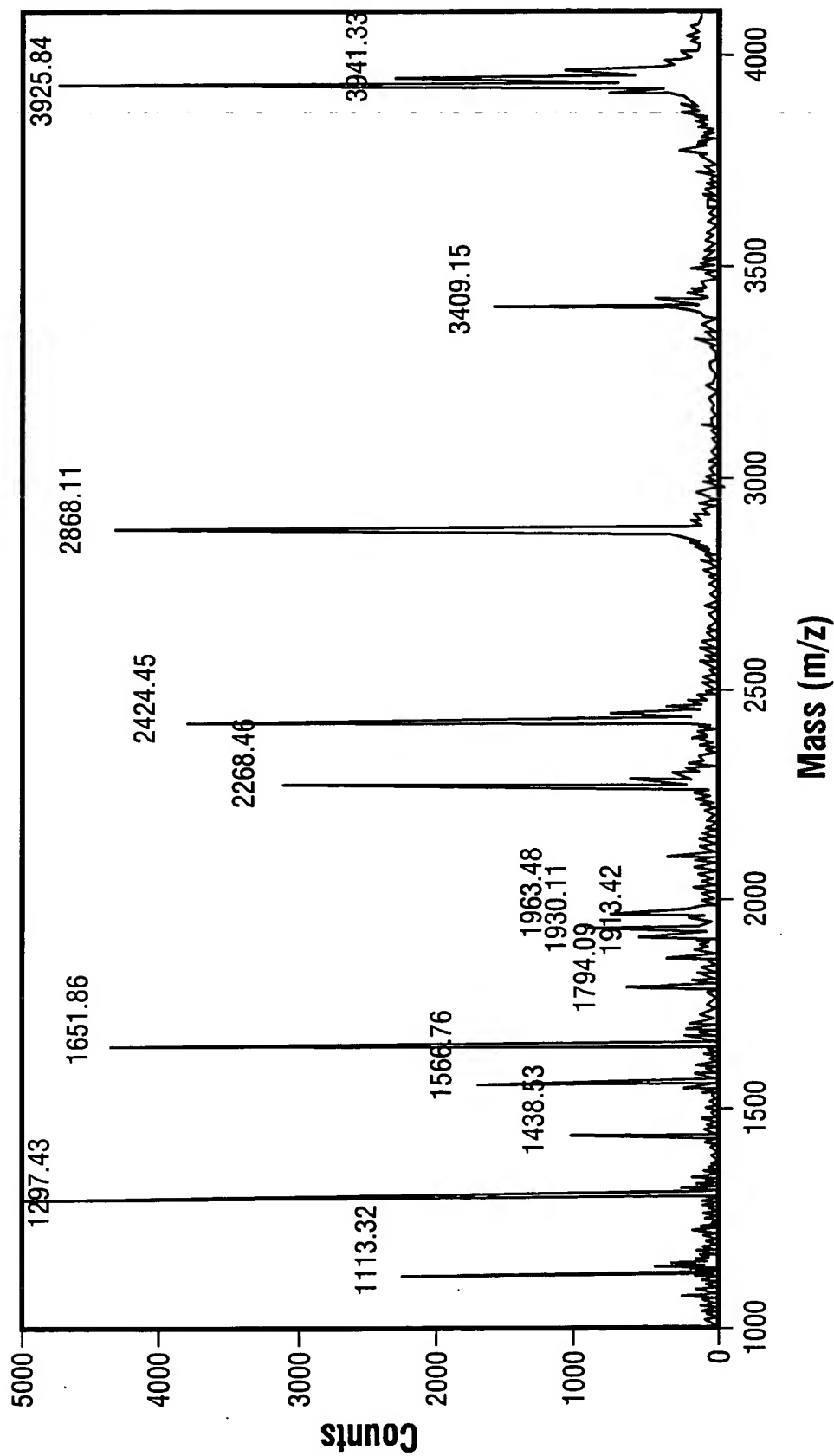
TIMED ION SELECTOR: 16.1 OFF

DELAY: 50 ON

LOW MASS GATE: 500.0

NEGATIVE IONS: OFF

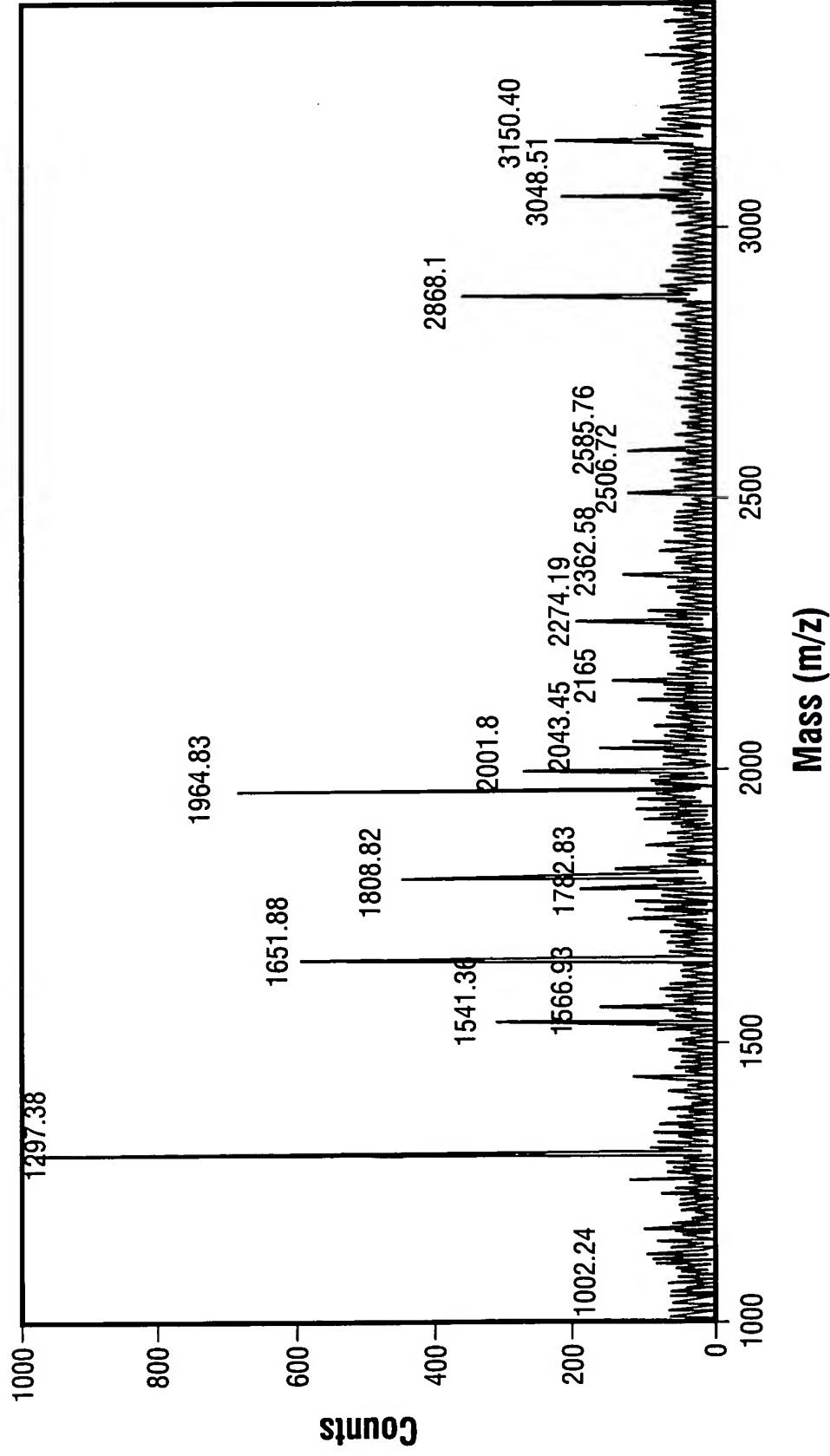
**FIG. 23D (Band 4)**



**COMMENT: BARNES TRYPS #5**

METHOD: LDE1000A	ACCELERATING VOLTAGE: 20000	LASER: 1965	MIRROR RATIO: 1.060
MODE: LINEAR	GRID VOLTAGE: 94.000 %	SCANS AVERAGED: 121	PSD MIRROR RATIO:
	GUIDE WIRE VOLTAGE: 0.075 %	PRESSURE: 3.68E-07	TIMED ION SELECTOR: 16.1 OFF
	DELAY: 50 ON	LOW MASS GATE: 500.0	NEGATIVE IONS: OFF

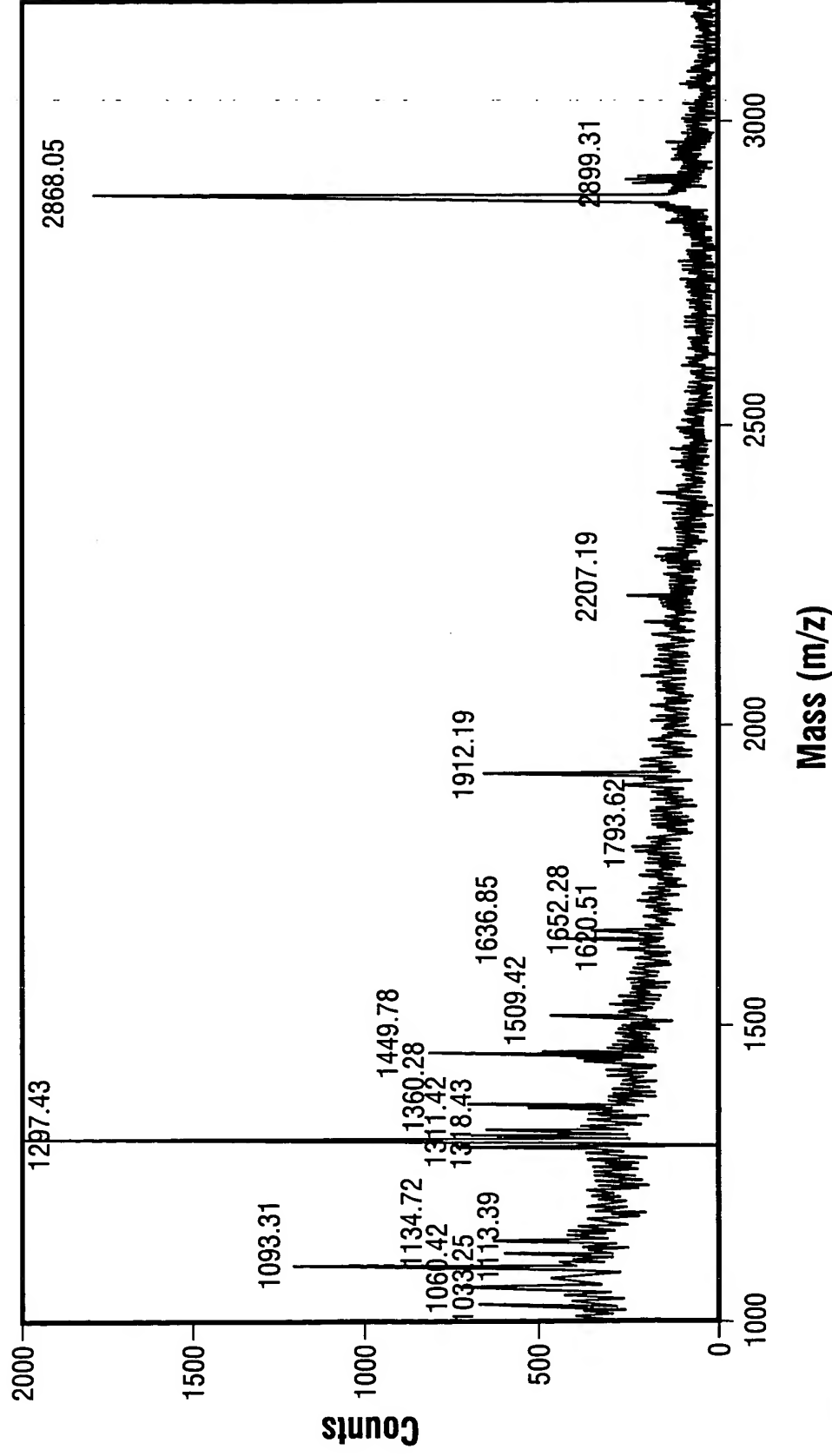
**FIG. 23E (Band 5)**



**COMMENT: BARNES TRYPS #6**

METHOD: LDE1000A	ACCELERATING VOLTAGE: 20000	LASER: 1965	MIRROR RATIO: 1.060
MODE: LINEAR	GRID VOLTAGE: 94.000 %	SCANS AVERAGED: 256	PSD MIRROR RATIO:
	GUIDE WIRE VOLTAGE: 0.075 %	PRESSURE: 4.06E-07	TIMED ION SELECTOR: 16.1 OFF
	DELAY: 50 ON	LOW MASS GATE: 500.0	NEGATIVE IONS: OFF

**FIG. 23F (Band 6)**



COMMENT: BARNES-7, TRY, 7.5%

METHOD: LDE1000A

MODE: LINEAR

ACCELERATING VOLTAGE: 20000

GRID VOLTAGE: 94.000 %

GUIDE WIRE VOLTAGE: 0.075 %

DELAY: 50 ON

LASER: 1965

SCANS AVERAGED: 256

PRESSURE: 5.89E-07

LOW MASS GATE: 500.0

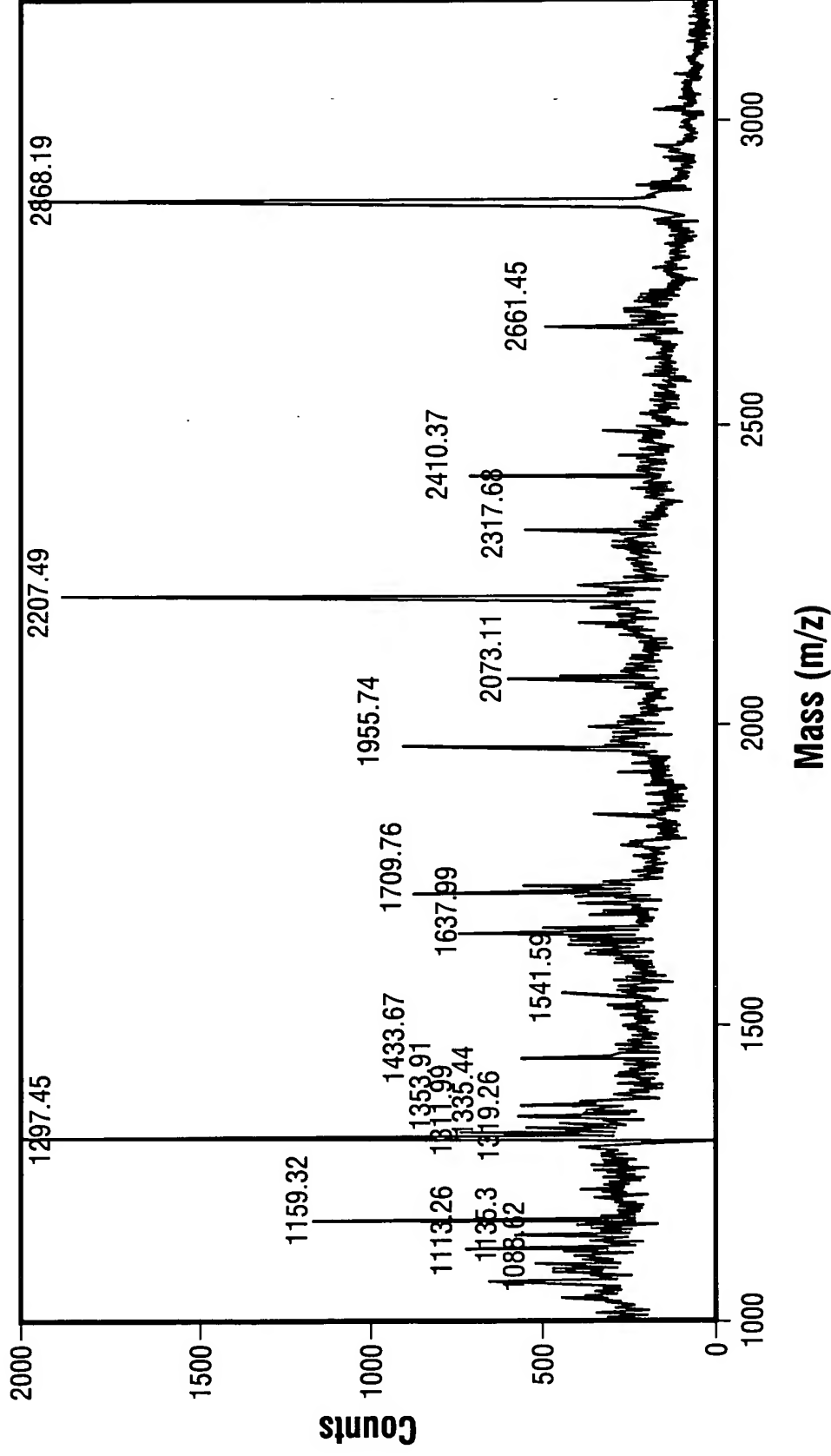
MIRROR RATIO: 1.060

PSD MIRROR RATIO:

TIMED ION SELECTOR: 16.1 OFF

NEGATIVE IONS: OFF

FIG. 23G (Band 7)



COMMENT: BARNES-8, TRYPSIN, 7.5%

METHOD: LDE1000A

MODE: LINEAR

ACCELERATING VOLTAGE: 20000

GRID VOLTAGE: 94.000 %

GUIDE WIRE VOLTAGE: 0.075 %

DELAY: 50 ON

LASER: 1965

SCANS AVERAGED: 256

PRESSURE: 4.01E-07

LOW MASS GATE: 500.0

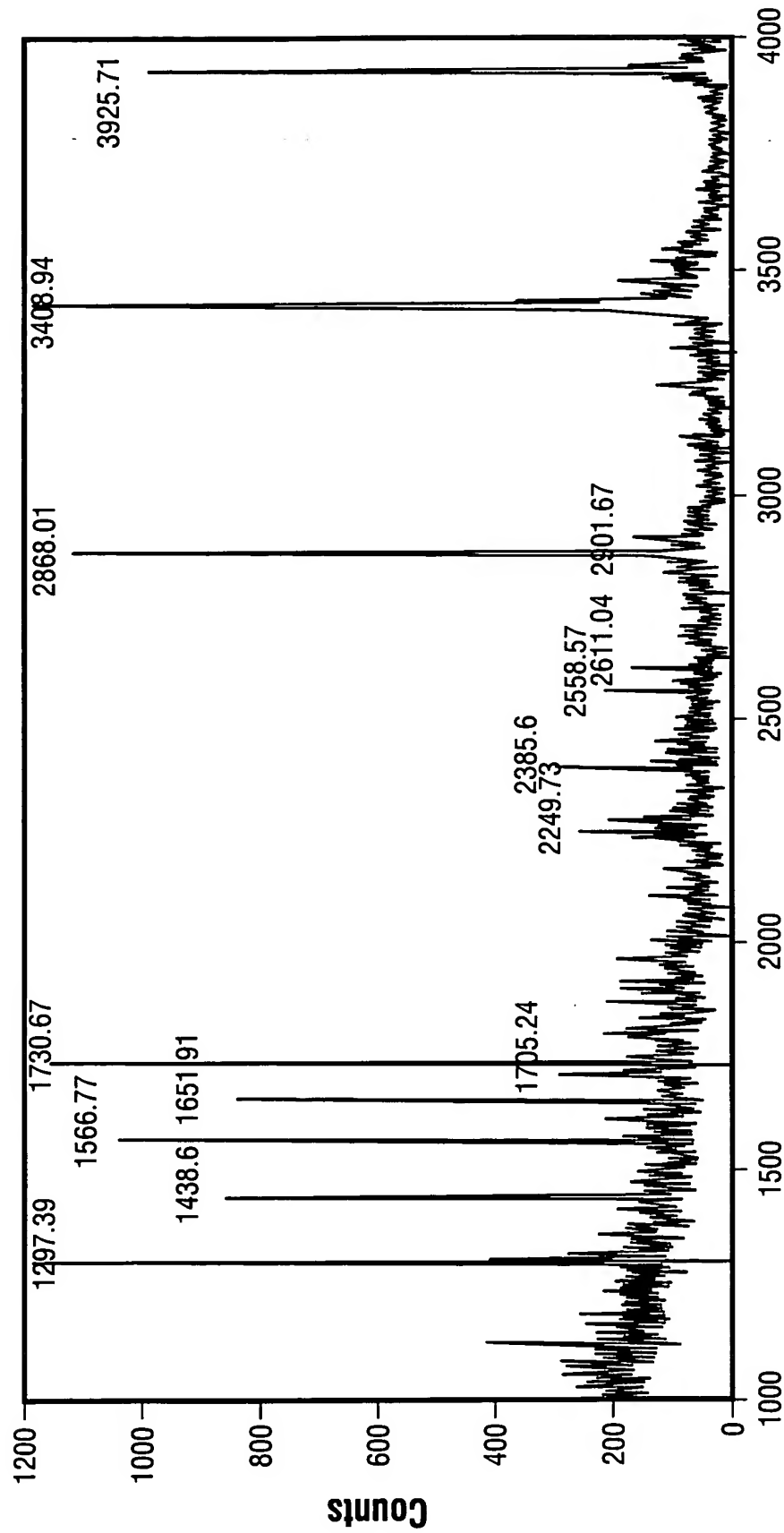
MIRROR RATIO: 1.060

PSD MIRROR RATIO:

TIMED ION SELECTOR: 16.1 OFF

NEGATIVE IONS: OFF

FIG. 23H (Band 8)



### Mass (m/z)

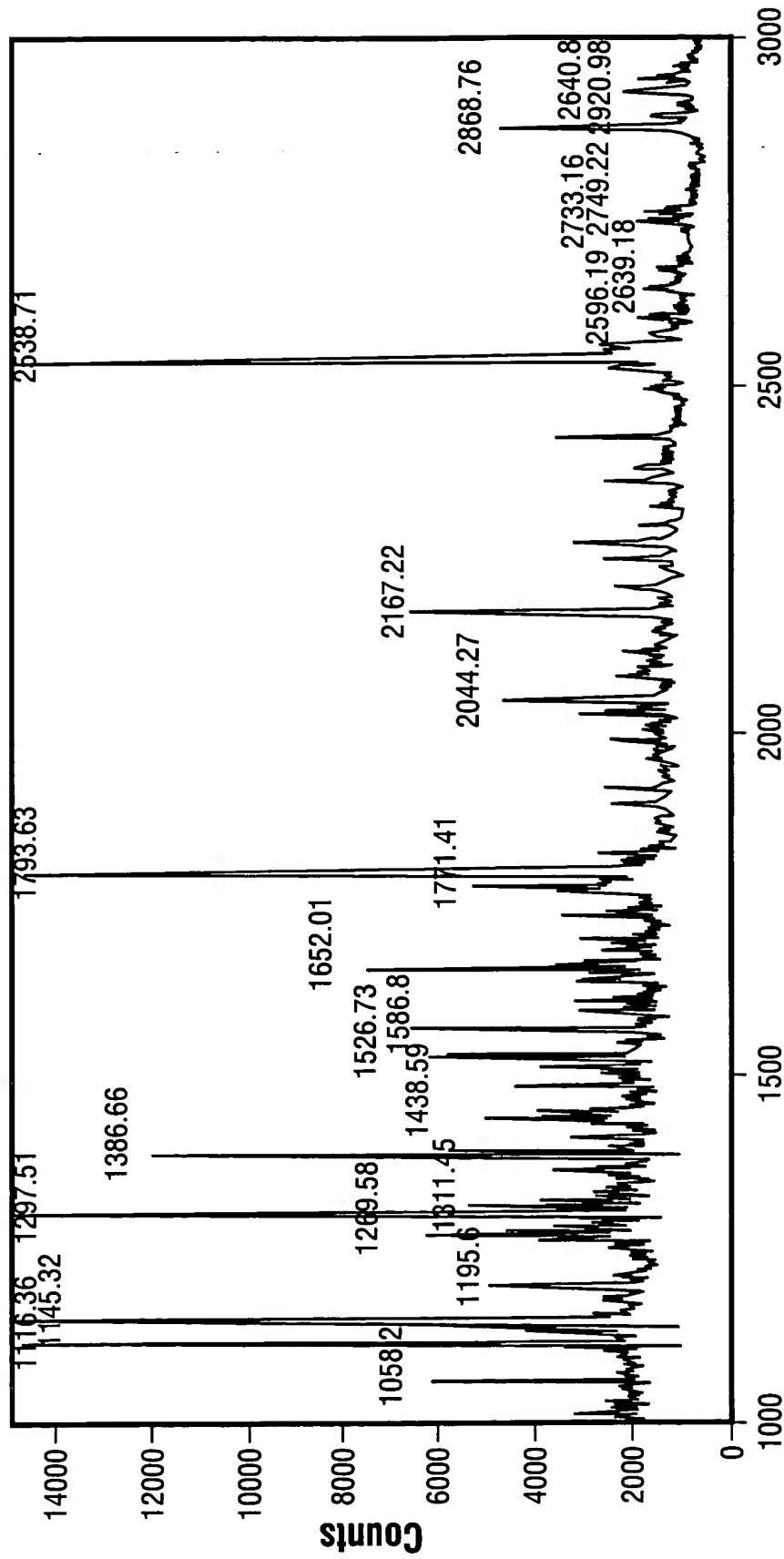
COMMENT: BARNES-89, TRYPMOD., 7.5%

METHOD: LDE1000A ACCELERATING VOLTAGE: 20000  
MODE: LINEAR GRID VOLTAGE: 94.000 %  
GUIDE WIRE VOLTAGE: 0.090 %  
DELAY: 50 ON

MIRROR RATIO: 1.080  
PSD MIRROR RATIO:  
TIMED ION SELECTOR: 16.1 OFF  
NEGATIVE IONS: OFF

LASER: 1860  
SCANS AVERAGED: 256  
PRESSURE: 3.27E-07  
LOW MASS GATE: 500.0

FIG. 23I (Band 9)

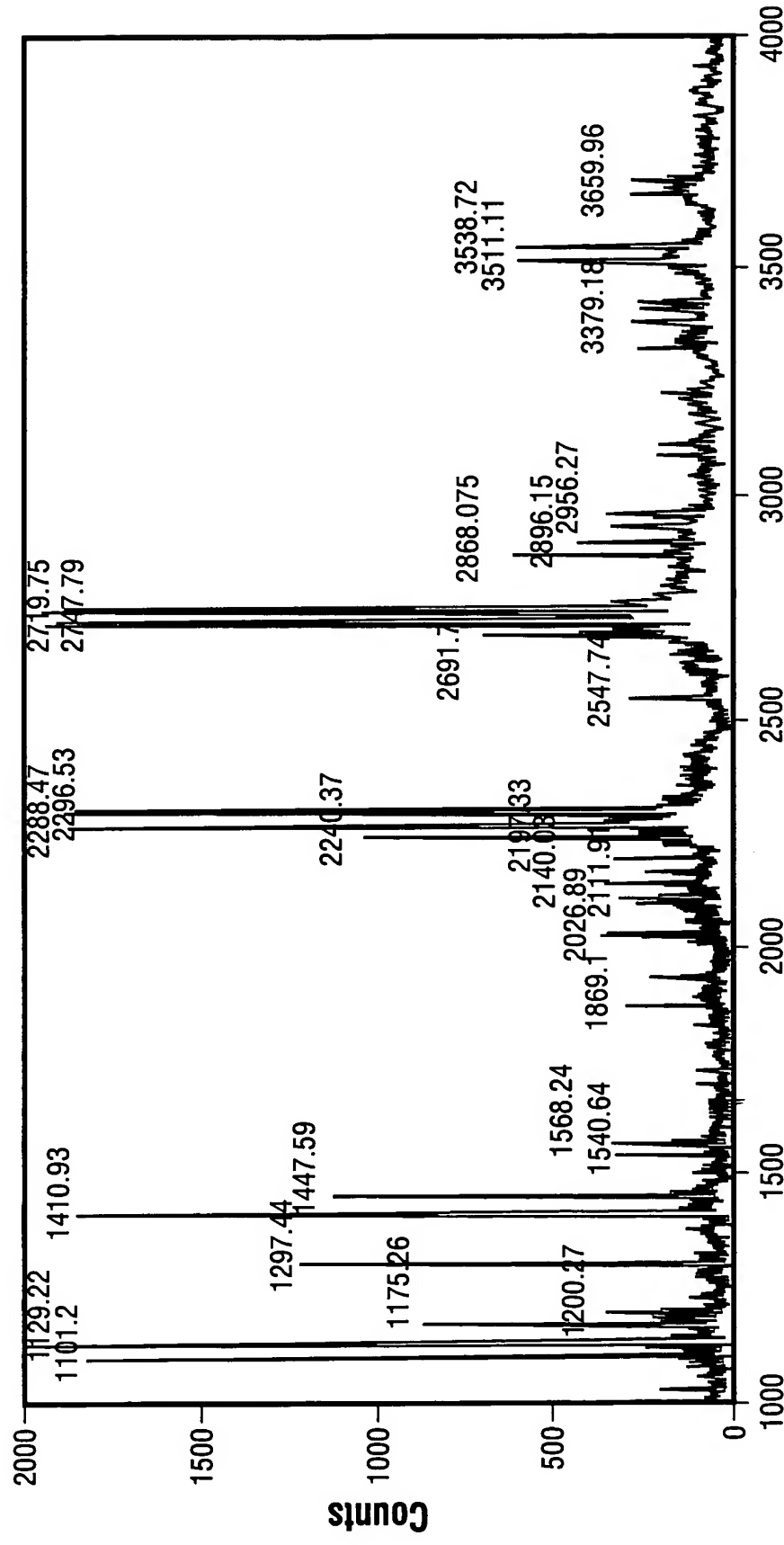


**Mass (m/z)**

**COMMENT: BARNES-11, TRYP, 7.5%**

METHOD: LDE1000A	ACCELERATING VOLTAGE: 25000	LASER: 1965	MIRROR RATIO: 1.080
MODE: LINEAR	GRID VOLTAGE: 94.000 %	SCANS AVERAGED: 256	PSD MIRROR RATIO:
	GUIDE WIRE VOLTAGE: 0.090 %	PRESSURE: 5.84E-07	TIMED ION SELECTOR: 16.1 OFF
	DELAY: 50 ON	LOW MASS GATE: 500.0	NEGATIVE IONS: OFF

**FIG. 23J (Band 11)**

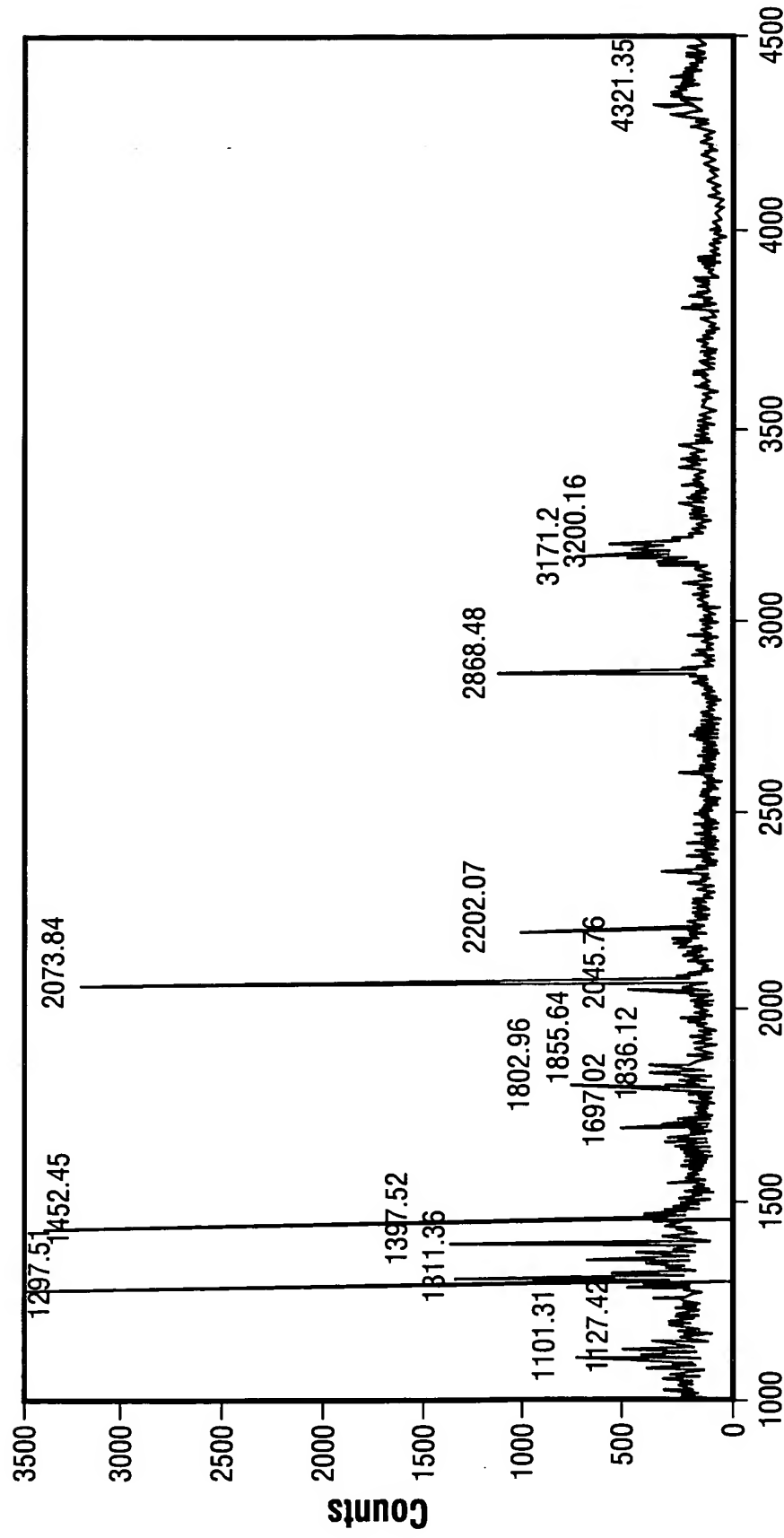


**COMMENT: BARNES-18, TRY, 7.5%**

METHOD: LDE1000A	ACCELERATING VOLTAGE: 25000	LASER: 1745	MIRROR RATIO: 1.080
MODE: LINEAR	GRID VOLTAGE: 94.000 %	SCANS AVERAGED: 256	PSD MIRROR RATIO:
	GUIDE WIRE VOLTAGE: 0.090 %	PRESSURE: 2.90E-07	TIMED ION SELECTOR: 16.1 OFF
	DELAY: 50 ON	LOW MASS GATE: 500.0	NEGATIVE IONS: OFF

**FIG. 23K (Band 18)**



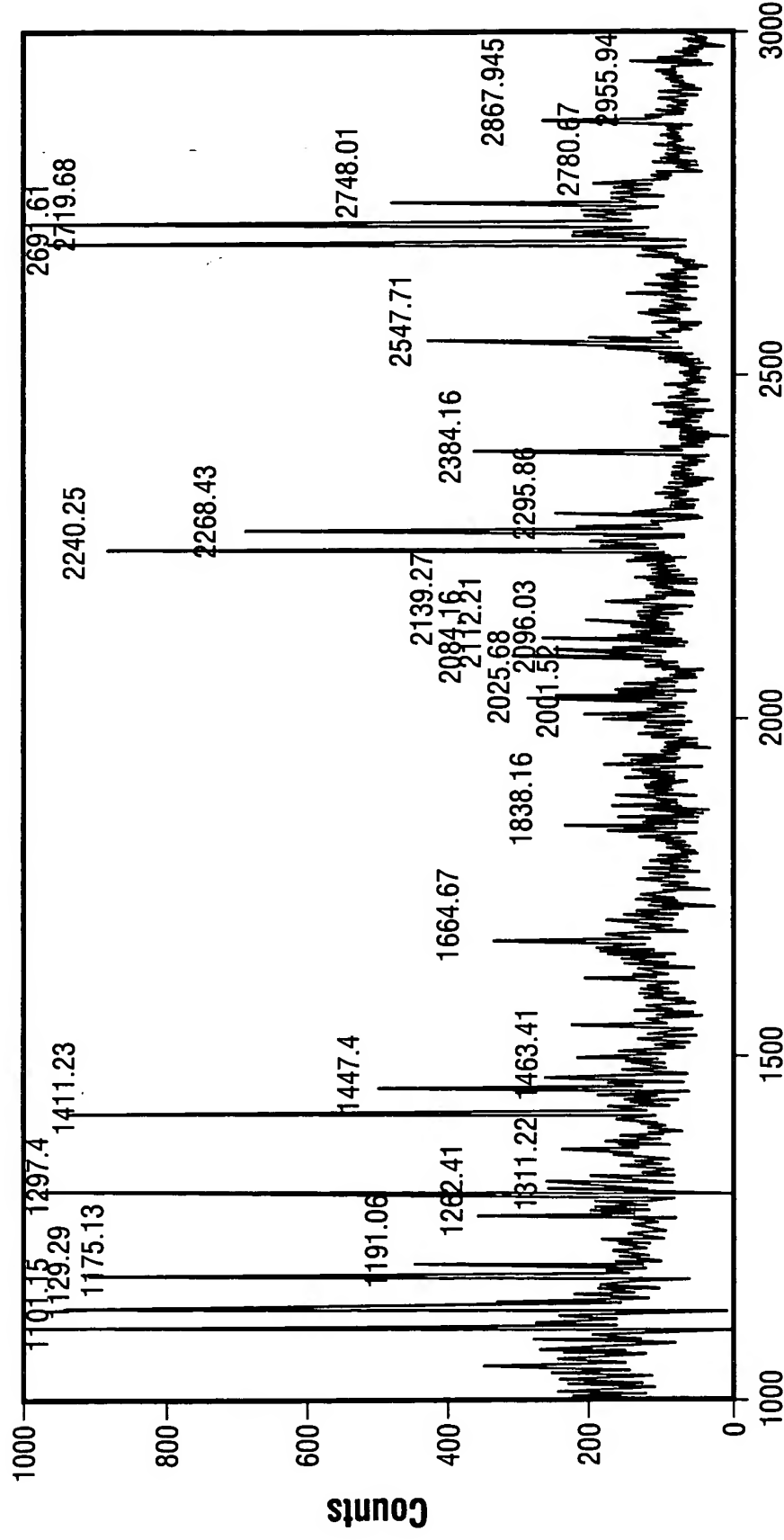


**Mass (m/z)**

**COMMENT: BARNES-20, TRYP, 7.5%**

METHOD: LDE1000A	ACCELERATING VOLTAGE: 25000	LASER: 1820	MIRROR RATIO: 1.080
MODE: LINEAR	GRID VOLTAGE: 94.000 %	SCANS AVERAGED: 256	PSD MIRROR RATIO:
	GUIDE WIRE VOLTAGE: 0.090 %	PRESSURE: 9.21E-07	TIMED ION SELECTOR: 16.1 OFF
	DELAY: 50 ON	LOW MASS GATE: 500.0	NEGATIVE IONS: OFF

**FIG. 23L (Band 20)**



### Mass (m/z)

COMMENT: BARNES-22, MOD.TRYP., 7.5%

METHOD: LDE1000A

MODE: LINEAR

ACCELERATING VOLTAGE: 25000

GRID VOLTAGE: 94.000 %

GUIDE WIRE VOLTAGE: 0.090 %

DELAY: 50 ON

LASER: 1870

SCANS AVERAGED: 231

PRESSURE: 3.43E-06

LOW MASS GATE: 500.0

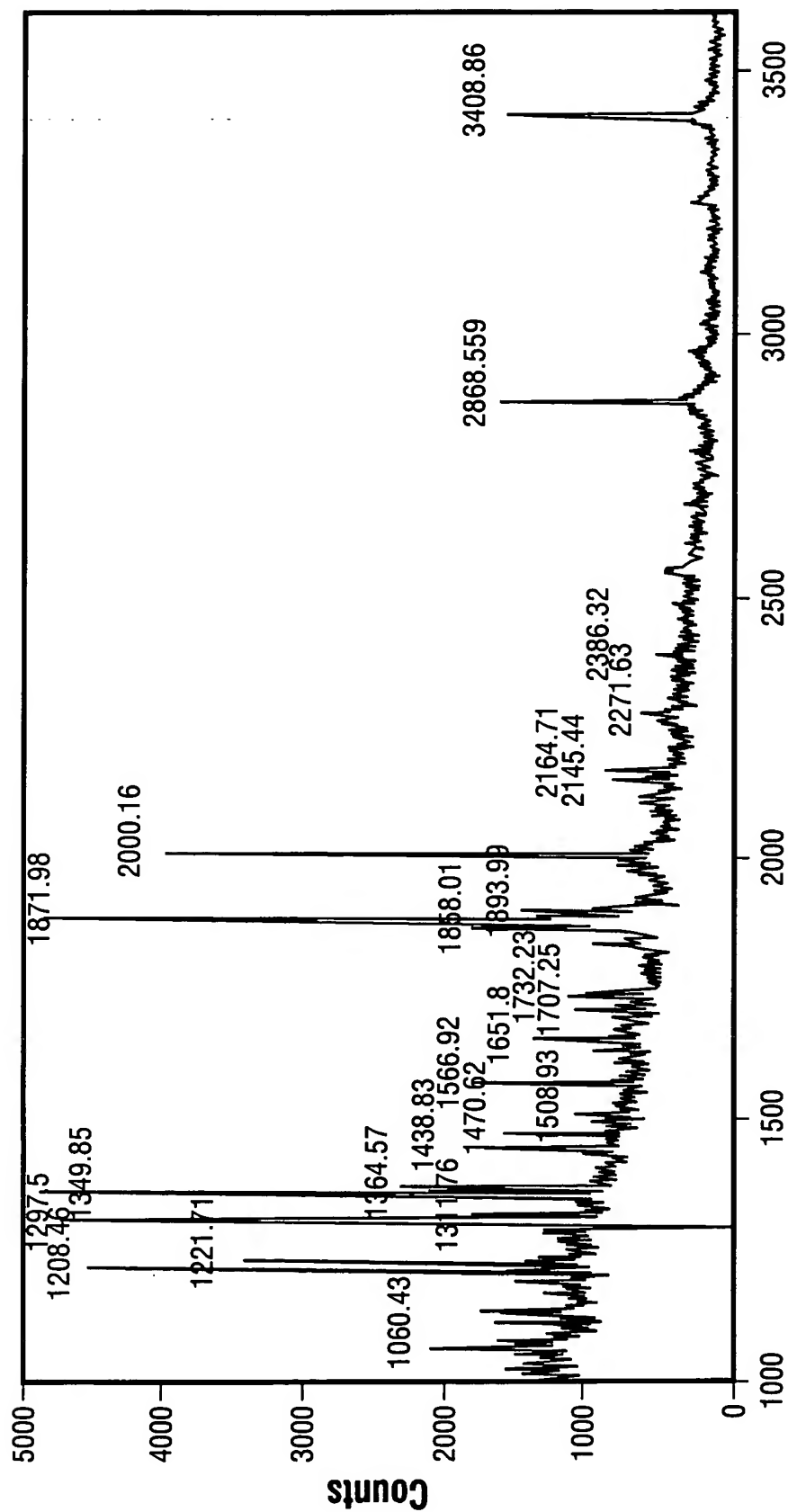
MIRROR RATIO: 1.080

PSD MIRROR RATIO:

TIMED ION SELECTOR: 16.1 OFF

NEGATIVE IONS: OFF

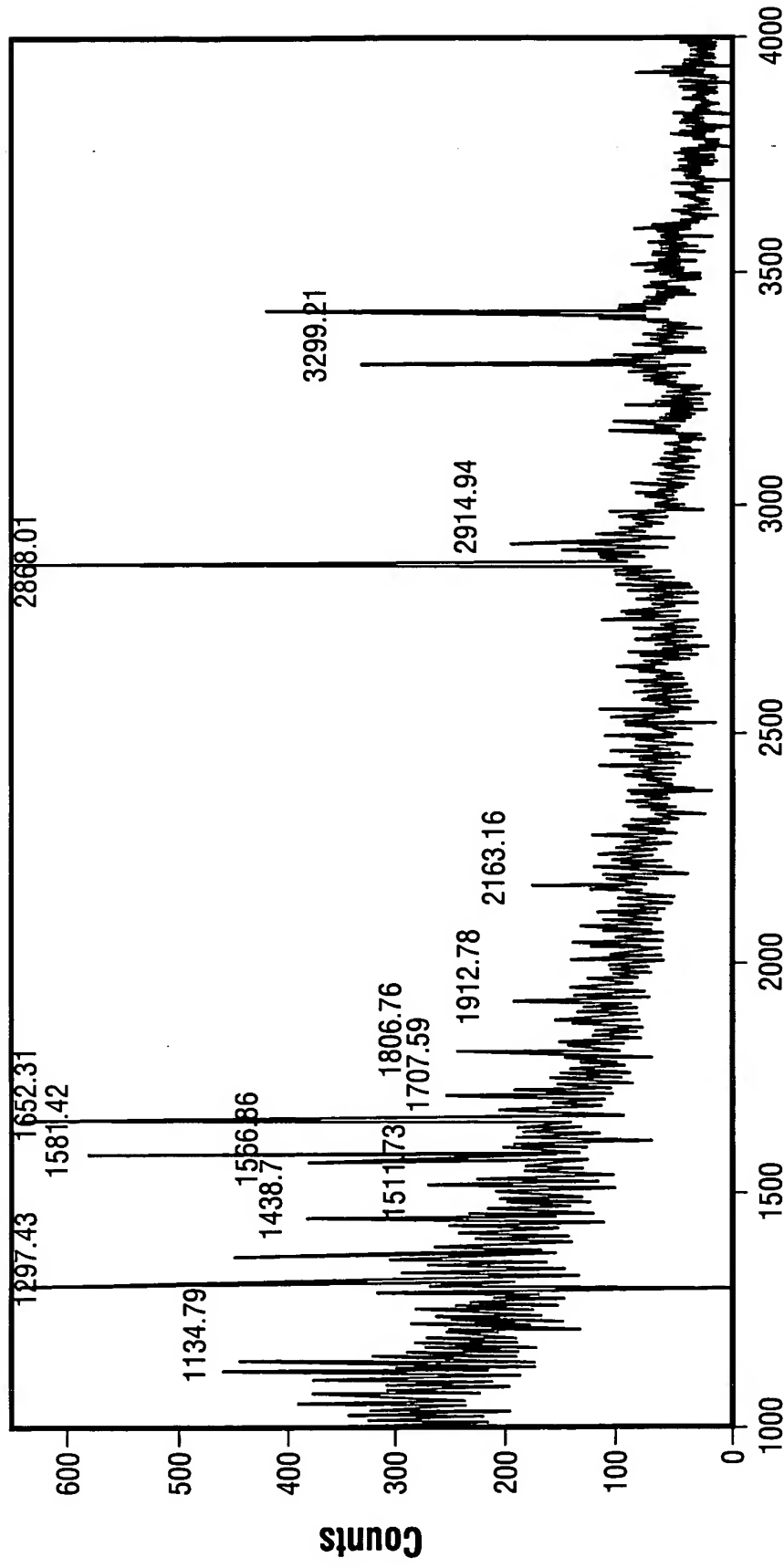
**FIG. 23M (Band 22)**



**COMMENT: BARNES-25, TRYP MODIFIED, 7.5%**

METHOD: LDE1000A	ACCELERATING VOLTAGE: 25000	LASER: 1860	MIRROR RATIO: 1.080
MODE: LINEAR	GRID VOLTAGE: 94.000 %	SCANS AVERAGED: 256	PSD MIRROR RATIO:
	GUIDE WIRE VOLTAGE: 0.090 %	PRESSURE: 9.26E-07	TIMED ION SELECTOR: 16.1 OFF
	DELAY: 50 ON	LOW MASS GATE: 500.0	NEGATIVE IONS: OFF

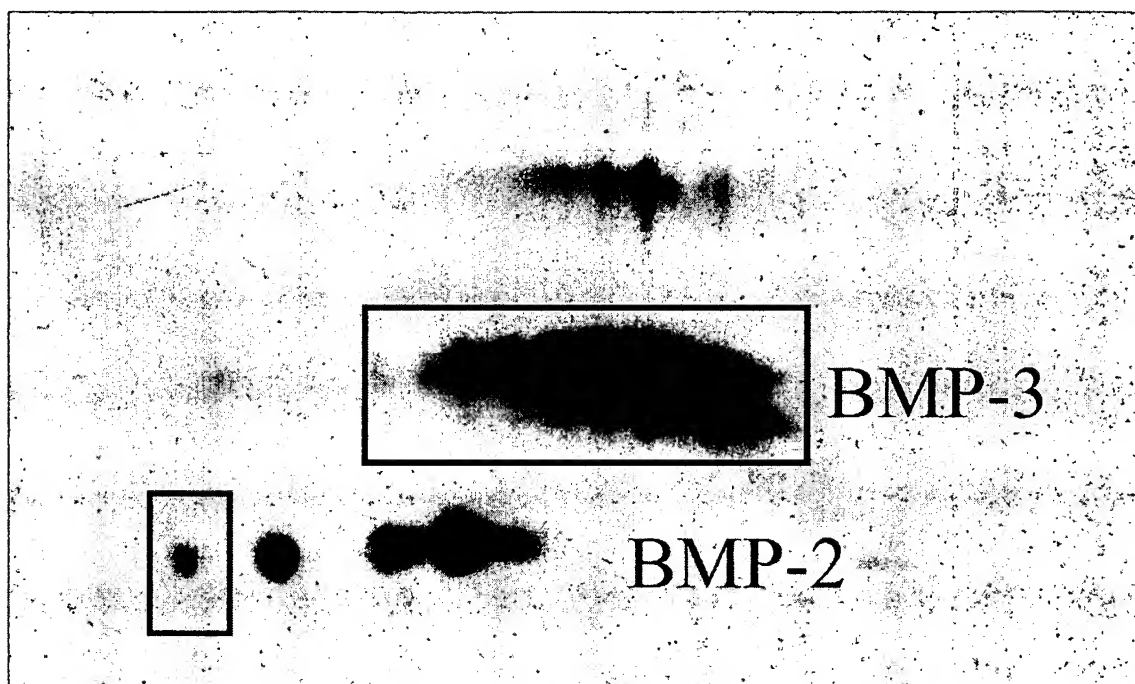
**FIG. 23N (Band 25)**



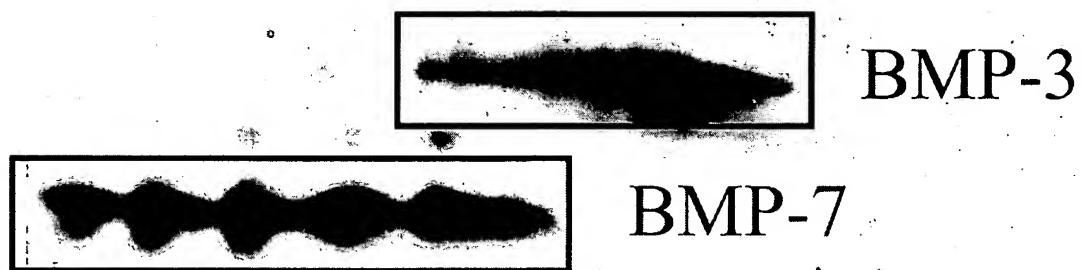
**COMMENT: BARNES-29, TRYPMOD., 7.5%**

METHOD: LDE1000A	ACCELERATING VOLTAGE: 25000	LASER: 1860	MIRROR RATIO: 1.080
MODE: LINEAR	GRID VOLTAGE: 94.000 %	SCANS AVERAGED: 256	PSD MIRROR RATIO:
	GUIDE WIRE VOLTAGE: 0.090 %	PRESSURE: 3.82E-07	TIMED ION SELECTOR: 16.1 OFF
	DELAY: 50 ON	LOW MASS GATE: 500.0	NEGATIVE IONS: OFF

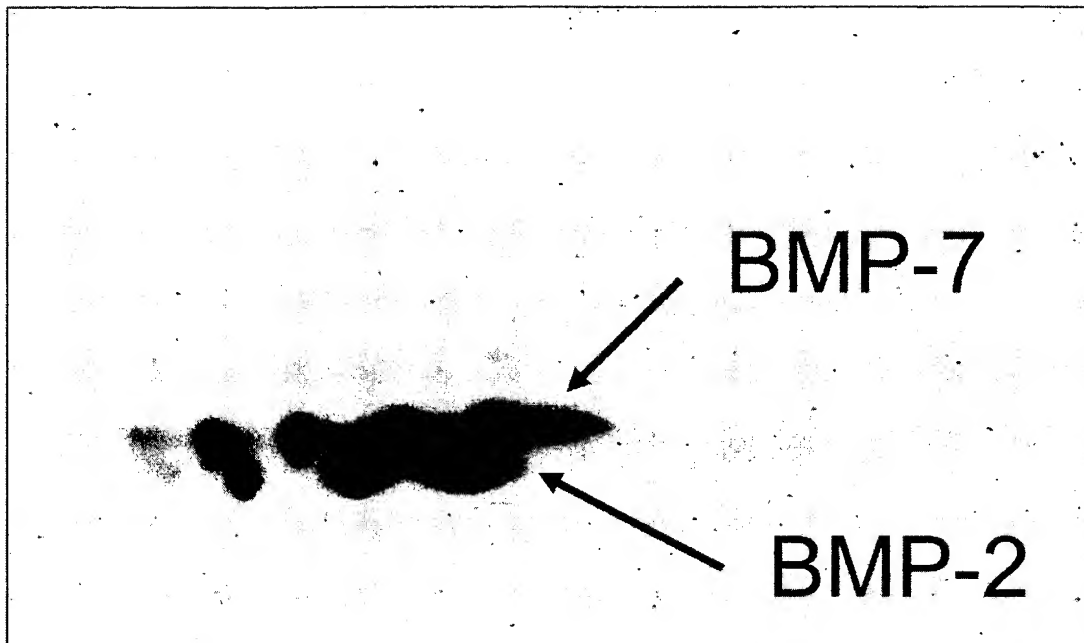
**FIG. 230 (Band 29)**



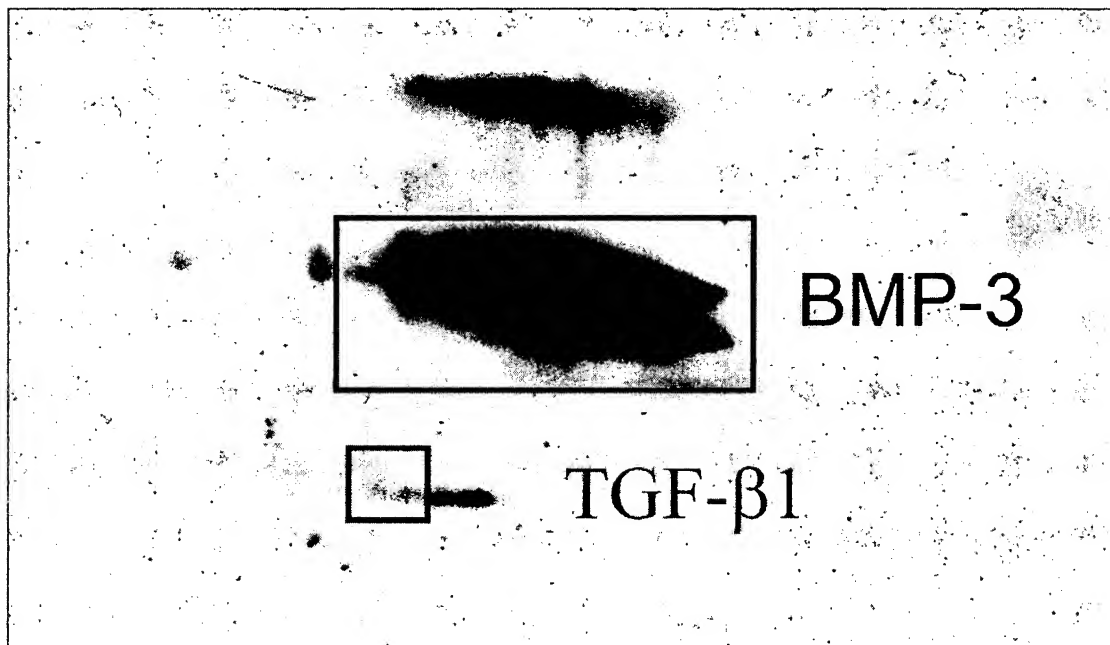
**FIG. 25A**



**FIG. 25B**

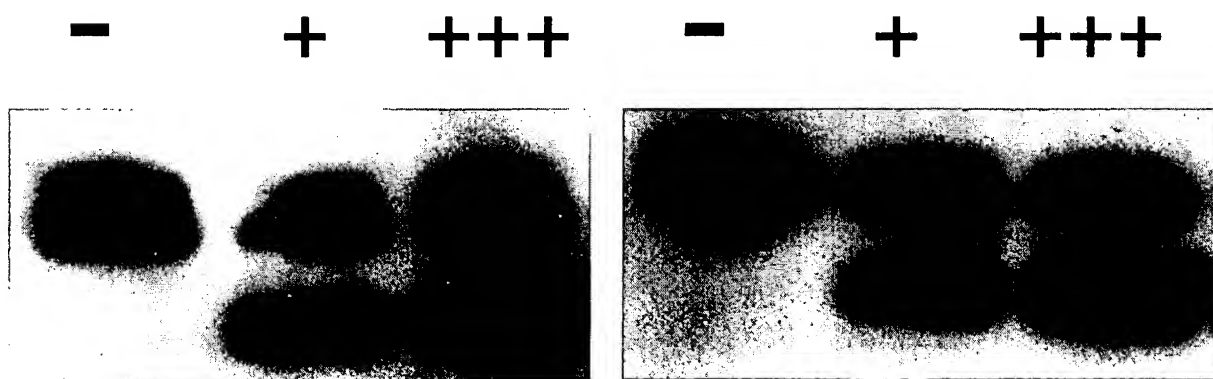
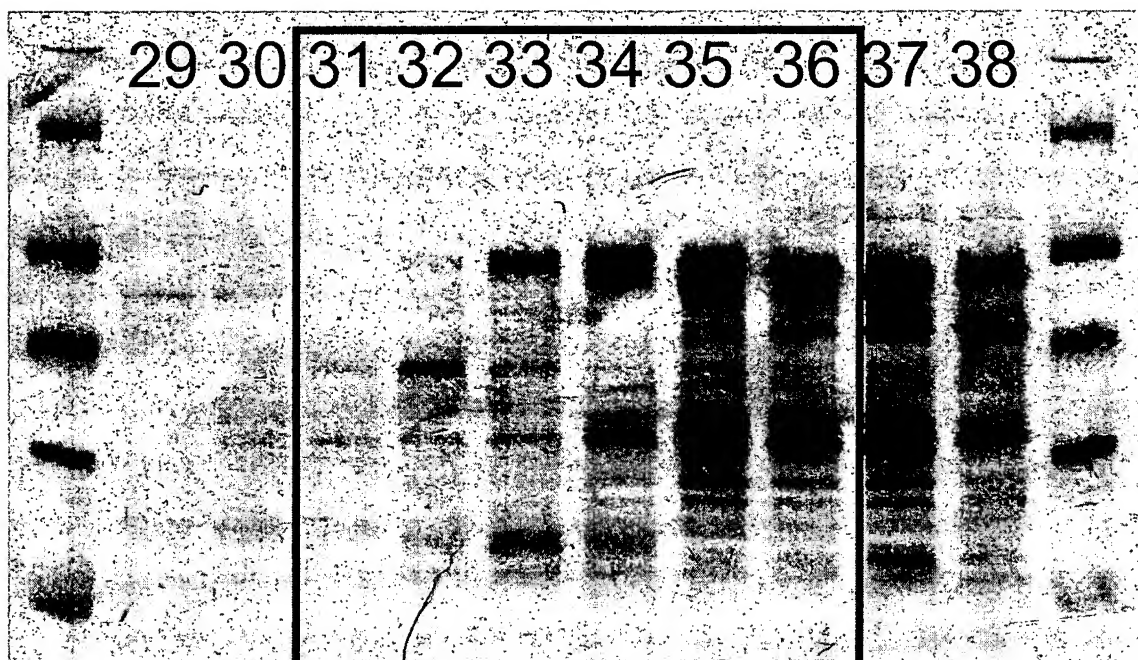


**FIG. 25C**



**FIG. 25D**

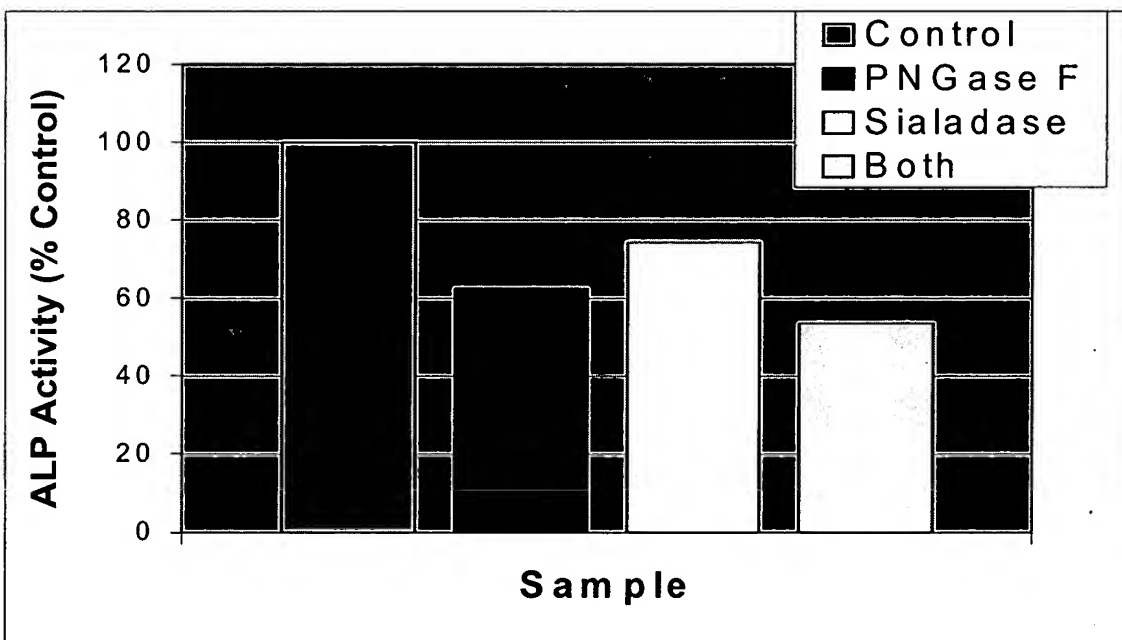
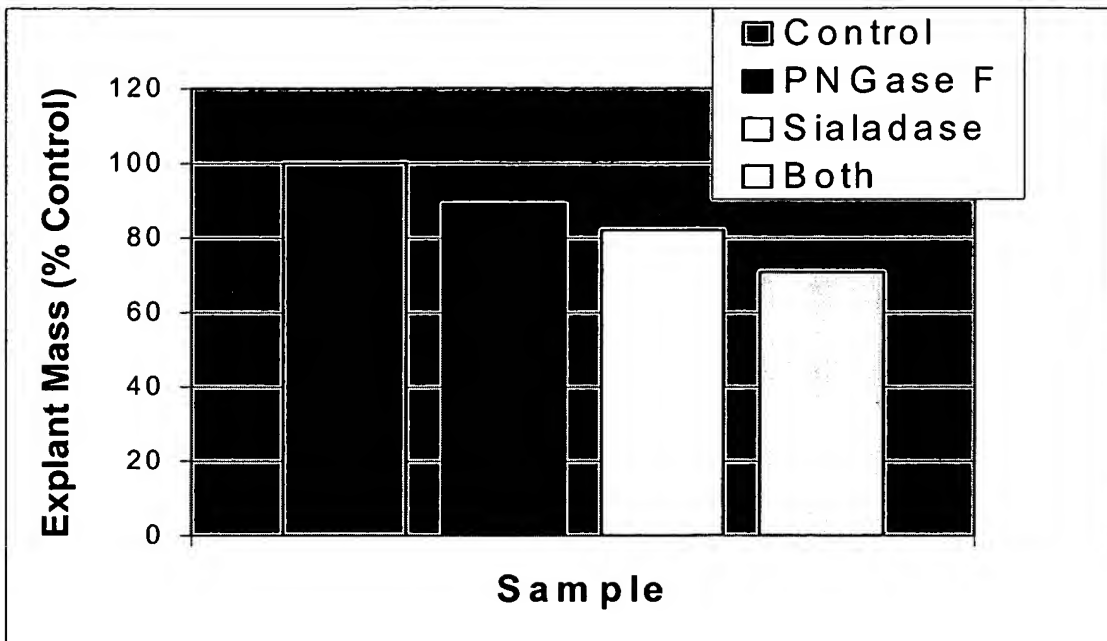
**FIG. 26**



**FIG. 27**

**FIG. 28**

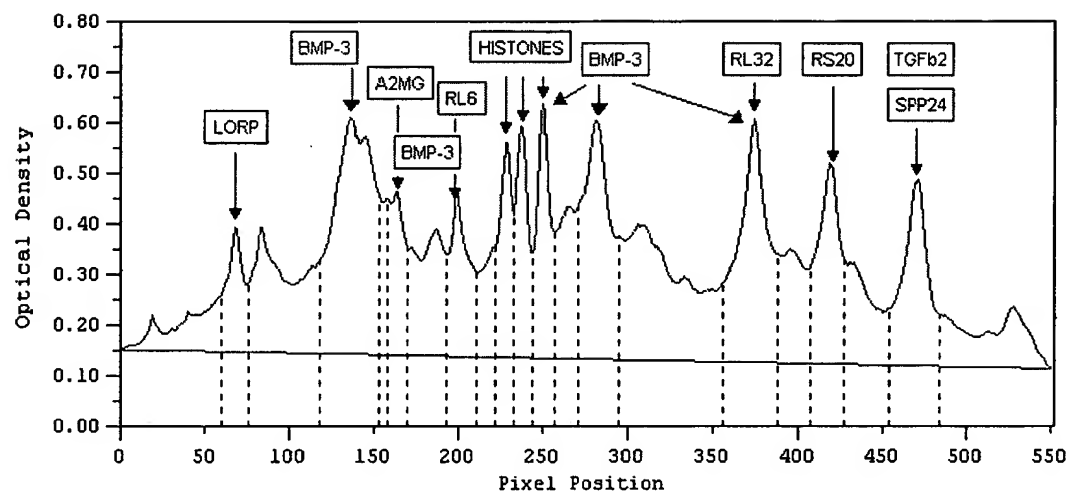
**FIG. 29A**



**FIG. 29B**



**FIG. 30A**



**FIG. 30B**

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